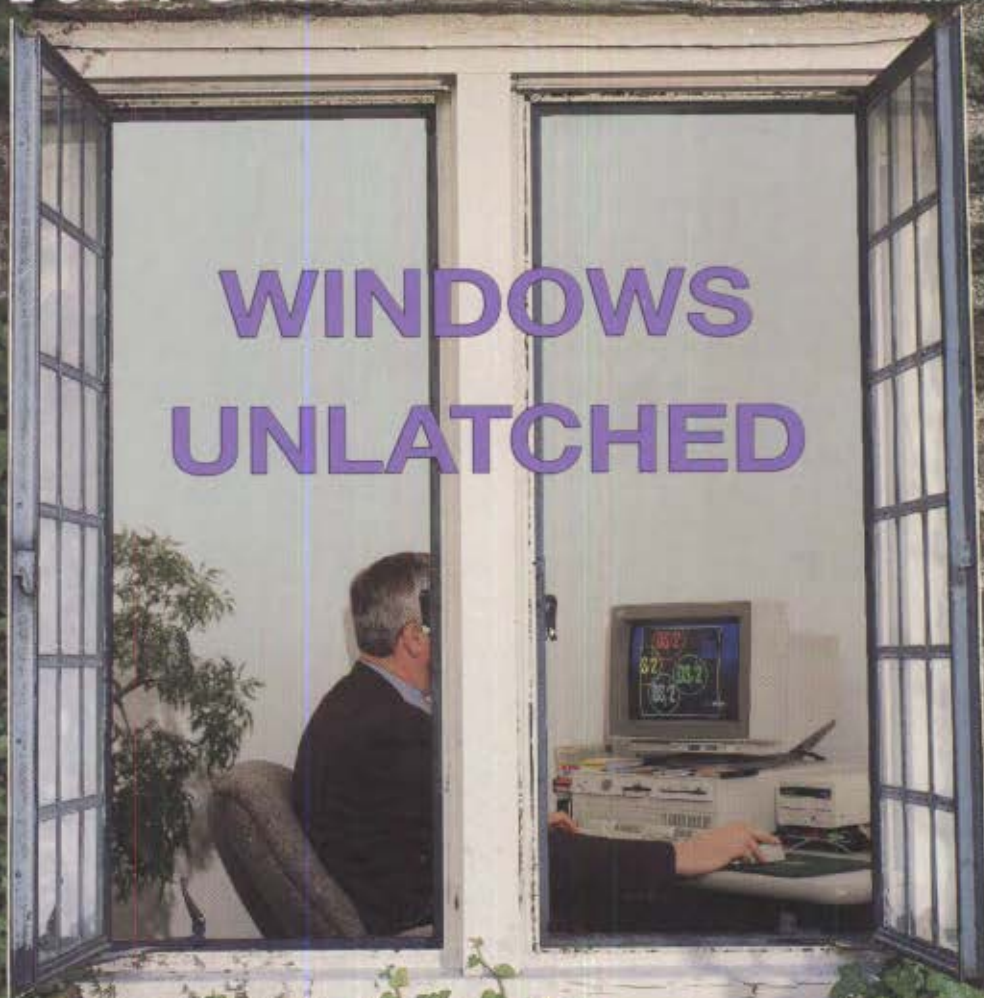


JULY 1993



PROFESSIONAL

WINDOWS UNLATCHED



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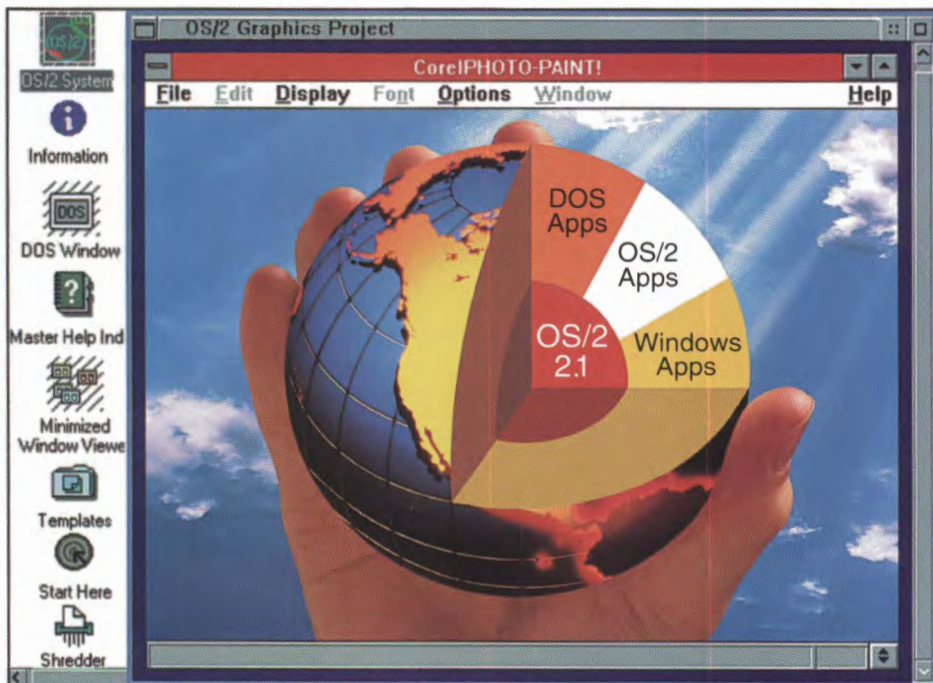
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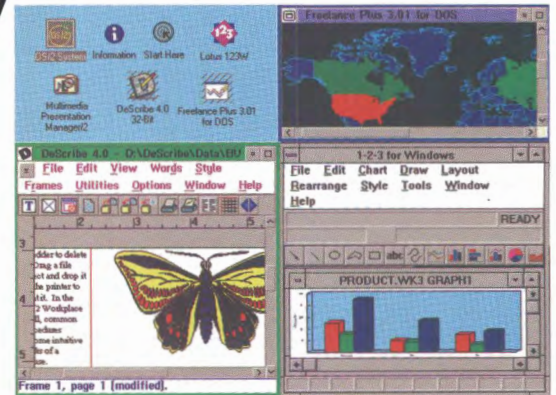
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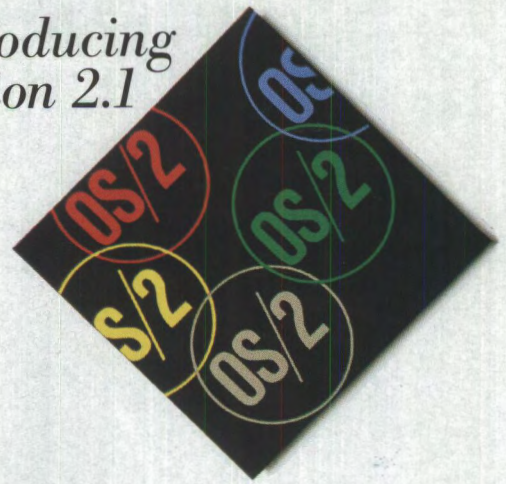
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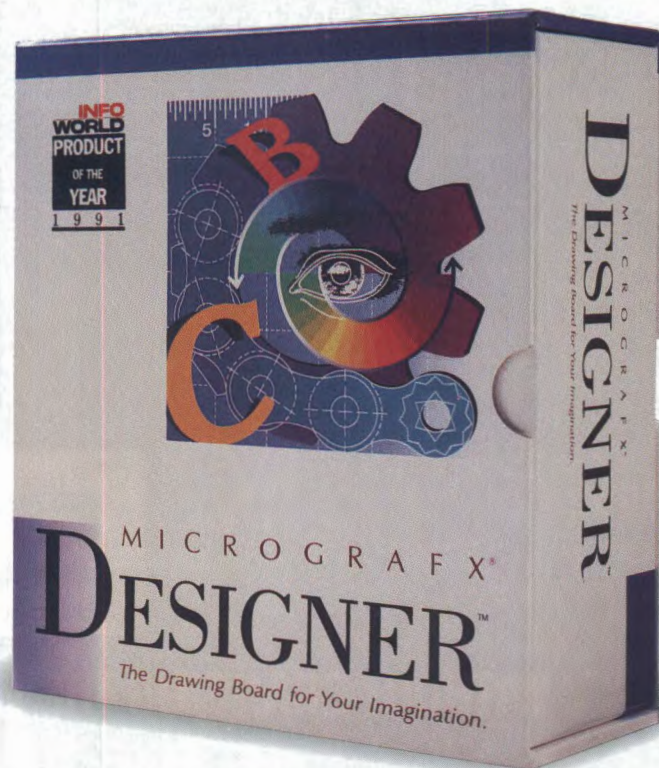
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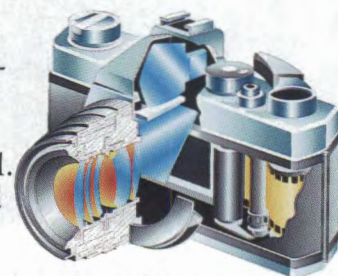


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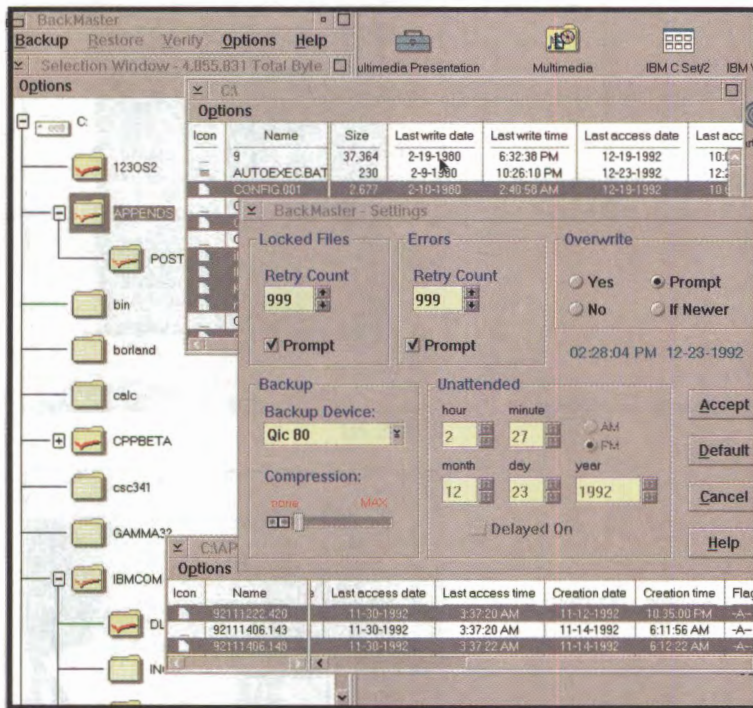
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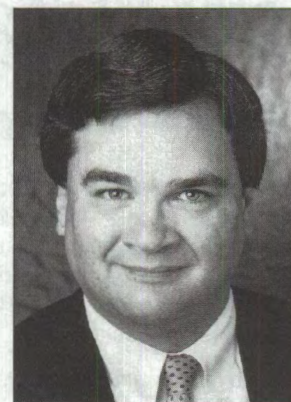
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Stop the feuding.

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PUBLISHER'S MEMO

It's time to take the diapers off OS/2 and treat it not as a hobbyist's dream but as the reality of next generation computing that it is. With the release of version 2.1, IBM's bold new operating system is reasonably ready for mass proliferation to the multiple millions. "Mass proliferation" is not just a catch phrase. It ironically means moving beyond and, to a certain extent moving away, from the cultic, semi-underground, pseudo-theistic movement that has nurtured and sustained OS/2 through its most disappointing days.

And it means turning away from the cry-baby supporters, the small timers, and even many of the worshipful who deified an operating system not only because it was valuable but because it was rejected by the masses. Let's face it. In embracing this rejected system, not a few of its devotees inculcated a special reassuring sense of being and purpose. For a certain very loud, very small, but very important segment, OS/2 became a driving force not that different from many other cultic fascinations. Like with Elvis, for these people OS/2 could never die. And indeed, they forced it to live by sheer devotion.

Fortunately, the vast majority of those who hold OS/2 precious are driven not by any sense of rejection but solely by the system's inherent potential and excitement. They are the visionary new-tech adopters who have always understood the power and the implications of a system that would empower the personal and mid-range computer by the same magnitude that the original PC empowered the individual. OS/2's beauty and its promise are universality, connectivity, genuine preemptive multitasking and the exotic gateways to multimedia, pen computing and network computing which hinge on its framework.

Hence, OS/2's marketing, advertising and business conduct must now grow up and reach into the marketplace that couldn't care less about OS/2 or NT or any other operating system. IBM needs to tap those millions who simply want their computers to work better, faster, more productively and more powerfully. For these people, DOS is invisible. So likewise, OS/2 will have truly arrived when its users don't know it exists.

These growing pains will not be insignificant. But if my information is correct, the effort is already underway. For one, the "Phantom of the Operating System"—a massive advertising campaign for OS/2 applications—is about to be unveiled. The advertising program is known to insiders as "the Roadblock." Despite months of delay, the final concept is a brilliant strike for OS/2. Commencing in July, IBM will purchase five-to-nine page ad units in more than a dozen leading computer publications promoting a wealth of OS/2-based applications. Get it? They're selling the applications, not the system. The system without applications is but a promise for the devoted. With mainstream appli-

cations, OS/2 is not just a promise but an empowerment.

No one can operate at a "higher level" without apps. Moreover, the apps in question are mainly not the products of the once-crucial small developer who lived from week to week on IBM's gratuities, subsidies and promises—often unfulfilled. It's time to play with the big boys: Lotus, WordPerfect, Computer Associates, SAS Institute, Stac Electronics, Corel. These companies are here for the long term. Likewise they require real market performance for continued partnership.

Oh yes, there will be much human and financial rubble as IBM turns away from the one- and two-apps developers it needed in the first years of OS/2. It's going to hurt. And it's not fair to these small business people who relied on IBM. But it is happening. Perhaps it must happen if OS/2 is to break out of the little leagues.

Most important, the Roadblock and other OS/2 advertising campaigns are running in the Windows media and such mainstream publications as *Business Week*, *Sports Illustrated*, and *USA Today*. The readers of *Business Week* only care that their mission-critical applications work. In their view, the moniker on the operating system is just a datum for the MIS manager.

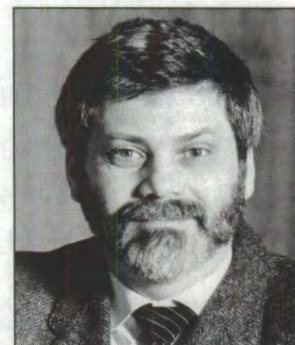
That's how you grow OS/2. Sell it to people who don't care about its history—only about its future. Forget about NT. Concentrate on OS/2.

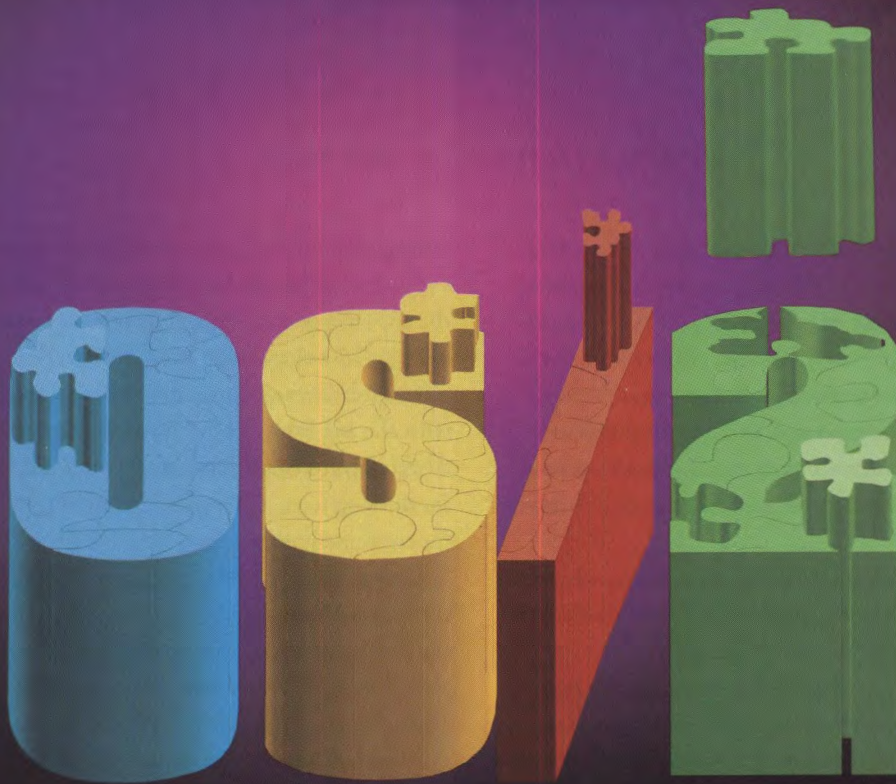
Another sign of growth is the exciting array of OS/2 interchanges now scheduled. PSP is sponsoring a vital Device Driver Interchange in mid-July in San Jose and a general Interchange at Disney World in Orlando in late August. We at *OS/2 Professional* are doing our part as well. We are sponsoring the biggest and most exciting Interchange of them all at Palm Springs on October 17-20. The event, held in association with IBM's Independent Vendor League, is expected to attract some 2,000 OS/2 developers, consultants, MIS managers and expert users.

Now, as we embark on the journey toward ultimate success for OS/2, we must recognize the pioneers. Like the vanguard in any great movement, their moment of greatest achievement is their own disappearance. To the basement developers, the unwaveringly devoted complainers and demanders, we take a moment to salute you. Without you, OS/2 would never have survived. Rest assured, you will not be remembered.

Nor will you be forgotten. This magazine will see to that.

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Comments, criticisms and observations

Applet to applet please

I am sitting here this evening with no less than four copies of your May issue. They were given to me by different members of the ISV community at Atlanta COMDEX, who wanted to bring my attention to the OS/2 2.1 review article which was written by one of your contributing writers, Herb Tyson.

The consensus was that the writer used the OS/2 2.1 review as an opportunity to "SLAM DUNK" the Microformatic's Fax/PM via the fax applet and promote a competitive product. It was generally agreed that I "must respond to such biased journalism."

IBM contracted Microformatic to produce the fax applet, a subset or limited version of Fax/PM (a full-function, 32-bit fax application). Microformatic delivered the product which met contractual feature/function specifications and provided IBM with the fax applet.

Although we could defend the fax applet with many favorable articles published by notable magazines on a worldwide basis which contradict Mr. Tyson's opinion, it would not focus on my core objection to Mr. Tyson's review. Evaluation of the fax applet should be made on a comparative basis with other available OS/2 applets, and not as a springboard to promote a competitor's full version product!

I agree with a journalist's right to express an opinion. However, a writer for a professional magazine has a responsibility to its readership to evaluate competitive products on an equal basis. The problem I have with this review? Mr. Tyson recommends buying a competitive product after evaluating the OS/2 2.1 beta fax applet. He is comparing a specially designed, limited-feature applet with a competitor's full version product. The readership might have been better served if he were able to make that recommendation after comparing the competition with Microformatic's full 32-bit version

of Fax/PM which includes, but is not limited to, being the first and only full, 32-bit send and receive fax application for OS/2; being capable under OS/2 or DOS without leaving the application; and not require a user to import document files into Fax/PM.

Yes there is more. And that's why we invite your magazine to do a product review. Give us a grade. But please, do it for Microformatic's full 32-bit version of Fax/PM and not a subset that was designed to meet a customer's contractual specifications.

*Cynthia Ainsworth
Microformatic Products
South Windsor, CT*

[Herb Tyson replies: IBM appears to have agreed with my assessment that the Fax/PM applet did not merit inclusion in OS/2 2.1. In reporting my impressions of the beta, upon seeing that the fax applet was being dropped, I chose to mention the only low-cost OS/2-based alternative I was aware of at the time. If Microformatic has a competing product, OS/2 Professional would be delighted to take a look at it, and to draw our own conclusions about the full product.]

Letters to IBM

I run fine under DOS PC Support or Emulation. But when I load up OS/2 and the Extended Services Communications Manager (complete with patch to make my clone work) I get periodic "Twinaxial Link Failed" messages at both ends. This is a new problem since we upgraded the AS/400 OS. Question: Why won't IBM software work with IBM software?

My impression is that OS/2 has a better interface than Windows. If it was bug free it would be my personal OS of choice. However, the apparently simple matter of AS/400 communications remains a problem. It took me many months to get the first patch, and now

it looks like I have to start the same process all over. Is a 486 clone with AMI BIOS so exotic that mighty IBM can't write workable software for it?

Plus, disk and memory requirements are still excessive. The first real OS/2 Lite or UNIX Lite or whatever will undercut the competition and win the desktop. Windows NT is winning the hearts and minds at the top end based solely on its name, and the perception that somehow it is a relative of Windows 3.x. If, however, OS/2 begins to invade the single-user desktop as a Windows replacement, the scenario could change radically. So as of today I can't recommend OS/2 to my management because it won't run on most of our PCs without a disk and memory upgrade.

This reader is neither an OS/2 bigot nor an OS/2 trasher. I'm just a guy trying to find a decent desktop OS. The window of opportunity for OS/2 is closing fast.

*John R. Culleton Jr.
Sykesville, MD*

I ordered OS/2 from IBM when version 2.0 shipped. But I returned it because it was incompatible with my SuperStor compressed hard drive. I have since had the opportunity to use OS/2 (a very stripped version) at work. I have found OS/2 to be harder to work with and just plain ugly, compared with Windows 3.1. I have no plans to move to Windows NT, unless software improvements require it (though my Gateway 2000 DX2-66V is certainly capable of running it).

*Lawrence B. Baker
Kansas City, MO*

It's garbage

I was one of those users that tried OS/2 2.0 when it first came out. I thought it was garbage. I sent it back.

Your OS/2 Professional magazine is in the same category with me. It is garbage. Your "frank" interviews, your inane publisher's memo and your adver-

continued on page 61

THIS *or* THIS?

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BYTES & PIECES

News and trivialities, important and obscure

2.1 splashes

The rollout of OS/2 2.1 at Spring COMDEX was an enormous success by all accounts. Preceded by a week of advance publicity and teaser advertising, IBM found the public very receptive to the long-delayed upgrade. For example, the IBM "store" sold more than \$100,000 in OS/2 related software and merchandise. That's more than twice what the store has ever sold in the past at any convention. *OS/2 Professional* moved more than 11,000 magazines in just three days. And the buzz around the convention hall in Atlanta was that frustrated users are getting a second wind of hope.

Edwin Black



Palm Springs Interchange

The OS/2 event of the year is coming this October 17-20, in Palm Springs, California, at the Marriott's Desert Springs Resort and Spa. The *OS/2 Professional* Interchange will be four intensive days of seminars and workshops designed by our leading participants, including IBM, Lotus and WordPerfect, in association with the editors of *OS/2 Professional* and IBM's OS/2 Independent Vendor League.

The accent is on 2.1 and everything users need to know to navigate the new version, LAN and C. This will be the event that prepares corporate developers, independent programmers, software designers, LAN experts, training executives, consultants or MIS managers for the challenges of 1994.

Those attending can select from 90 very special sessions, conducted by the most acknowledged independent OS/2 consultants in the world, as well as the top experts from IBM, Lotus, Computer Associates and WordPerfect. The Interchange Board of Advisors combines the best minds in the OS/2 community, including John Soyring, Lois Dimpfel, Ted Salamone and Dave Whittle from IBM, Jim Burnham from Lotus and independent consultants Michael Kogan and Mark Minasi. It's all designed to ensure the biggest and best interchange yet with the most up-to-the-minute developments.

Keynote speakers for the affair include: John Soyring, IBM PSP director of software development programs, celebrated columnists and authors John Dvorak and Will Zachmann, as well as *OS/2 Professional* publisher and editor Edwin Black.

Every registrant will receive a CD-ROM loaded with OS/2 plus extras, as well as a copy of WordPerfect 5.1 for OS/2 and a choice from the hot new groups of OS/2

applications from Computer Associates. Registration is limited to 2,000 seats. Early registrants can also pick up complimentary copies of Lotus 1-2-3, DeScribe and Stacker for OS/2 at the respective pre-conference sessions. For immediate registration, readers may fax the registration form found in the Interchange brochure (see page 9 of this issue), or call (800) GET OS20 or (800) 438-6720.

Upgrade. Downgrade. Degrade.

What exactly is an upgrade? With MS/DOS version 6, apparently it's a move from OS/2 back to DOS. When you receive your new DOS Upgrade kit from Microsoft, part of the manual is devoted to "Upgrading from OS/2 to MS-DOS 6." This section tells you all about replacing OS/2 on your system, whether you're using dual boot, the Boot Manager or OS/2 exclusively.

One warning that the manual refers to, but doesn't explain in much detail, is that MS-DOS 6 not only replaces the operating system, it reformats the disk if you choose to install it on a computer that maintains OS/2 as the only operating system. If this is what you want to do, DOS will do it. But you might want to back up your data on a DOS-formatted disk first.

Incidentally, MS-DOS will work fine on a system that already has dual boot or the Boot Manager. Just start your

machine with MS-DOS and follow the instructions to perform the upgrade. If you're upgrading a system that uses the Boot Manager, you'll find that the MS-DOS installation software has made the DOS partition of your disk the active partition. You'll need to use FDISK to change the active partition back to the one containing the Boot Manager.

Why such an "upgrade" from Microsoft? Several observers have suggested that, while it does give users more flexibility, the real reason is to irritate IBM.

Wayne Rash

Tailhook cracked by computer

Few in the nation know that the Tailhook scandal, marked by a stonewall of silence, was finally brought down by a first ever computerized cross-checking of the evidence.

The 1992 Tailhook Association Convention was held in Las Vegas. By the time the public uproar sparked a concerted investigation, the perpetrators, victims and witnesses were dispersed at military installations and vessels around the world. During the probe, some 20 investigators conducted more than 1,000 interviews—sometimes as many as 50 people daily. Subjects were located from California to Japan, and at least 34 agreed to lie detector tests.

But this time, agents of the Pentagon Inspector General's Office used laptop computers

continued on page 83

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Leaving the Cult Behind

BY WILLIAM F. ZACHMANN

At this point there doesn't seem to be much question that OS/2 2.1 will bring considerably greater success for OS/2 in the future than it has enjoyed in the past. If the 2.0 version proved to be the biggest "underground" hit of 1992, the new 2.1 version looks like it will bring OS/2 mainstream success.

Paradoxically, growing success for OS/2 2.1 looks like it will prove to be as disturbing for some of OS/2's early supporters as it will surely be for some of OS/2's competitors. In a strange twist of fate at least some of OS/2's earliest and most enthusiastic supporters have become outspoken complainers of OS/2 even as the rest of the world starts to embrace it on a large scale.

Those who are genuinely interested in the success of OS/2—whether those users who are enthusiastic about its potential, corporate professionals recommending it for their organizations or the folks at IBM who are selling it—will be well advised to take note of this peculiar phenomenon. At least a few of OS/2's early "friends" and ardent supporters may turn out to be some of the more troublesome roadblocks that OS/2 will need to avoid on the way to broad acceptance.

The first and least harmful category of potentially dubious "friends" of OS/2 are those who were and still are genuinely enthusiastic about it but who were attracted, as well, by its previous "underground" and even "cult" character. For some folks, at least part of OS/2's early appeal was to be part of an "in crowd" that kept the "true faith" while the rest of the world, including nearly all analysts and most of the trade press, was held in the thrall of Microsoft's "Windows Everywhere" mantra.

The problem with some of these folks is that broad accep-

tance spoils the game. As a growing number of people start to appreciate and to use OS/2, the "in crowd" mystique is dissipated—to their considerable distress.

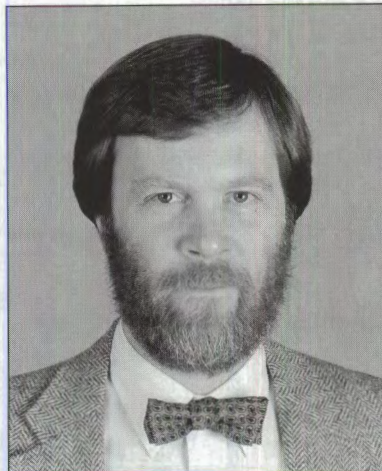
A similar cultic movement occurred with the Apple Macintosh and, in fact, is still somewhat of a problem for the Macintosh. A fair number of the very early adopters of the Mac reacted negatively as it began to achieve broader success and broader acceptance. Rather than welcome wider interest in what they considered "their" platform, they accused Apple of "selling out" and "compromising the principles" of the Mac. The image of a system supported by a querulous cult group dogs the Macintosh to this day.

The most prominent symptom of such reaction on the part of OS/2 enthusiasts is in the persistence of the "OS/2 vs. Windows" mentality and the tendency to dump on Windows that I discussed in the last issue [May Zachmann's View]. Some of these folks are so determined to prove that anyone who uses Windows is an idiot that they

obscure the fact that OS/2 2.1 is a terrific operating system for most Windows users who choose it as an upgrade path. They do OS/2 no good in the process.

Another less benign category of early OS/2 supporters includes those whose early interest in and enthusiasm for OS/2 was also substantially motivated by financial gain. Of itself, there is nothing fundamentally wrong with that. Some developers and resellers, for example, bet on eventual success for OS/2 at considerable financial risk to themselves and are certainly entitled to the rewards of their effort and commitment.

A minority, however, seem to have developed the notion that because they were on the OS/2 bandwagon early that OS/2 generally, or IBM in particular, somehow owes them a



ZACHMANN'S VIEW

living. They feel they ought to be rewarded for that alone, regardless of how useful the results of their efforts may otherwise be. When they are not successful, they are inclined to blame OS/2 or IBM, and may even conspicuously embrace competitors, rather than admit that their own product or business was not based on sound principles in the first place.

Not every OS/2 product or every OS/2-related business is bound to succeed. However much good will early OS/2 adopters may have had, for example, toward developers who marketed 32-bit OS/2 applications ahead of time, not all such products will be successful. As with every other competitive market, some will do very well; others will not. Some of those who do not, however, may be inclined to blame OS/2 or IBM for their own shortcomings. And they won't help OS/2 in the process.

A subset of the latter are those who seem to have assumed that IBM ought not only work to make OS/2 a success, but ought to subsidize its business ventures in the process. A few have reacted to IBM's unwillingness to do so by attacking IBM

and OS/2 even as the rest of the world grows increasingly positive about both.

The bottom line is that one is bound to see at least a few conspicuous instances of public apostasy on the part of some early supporters of OS/2. Such instances will certainly be seized upon by those who are promoting competitive operating systems to "prove" that OS/2 is in trouble. They will prove nothing of the sort. What they will prove is that a few of OS/2's early advocates were in fact more interested in advancing their own agenda than they were in OS/2. ♦

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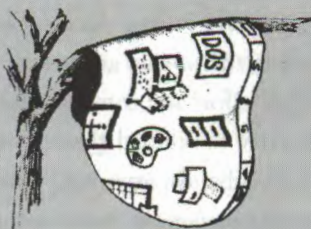
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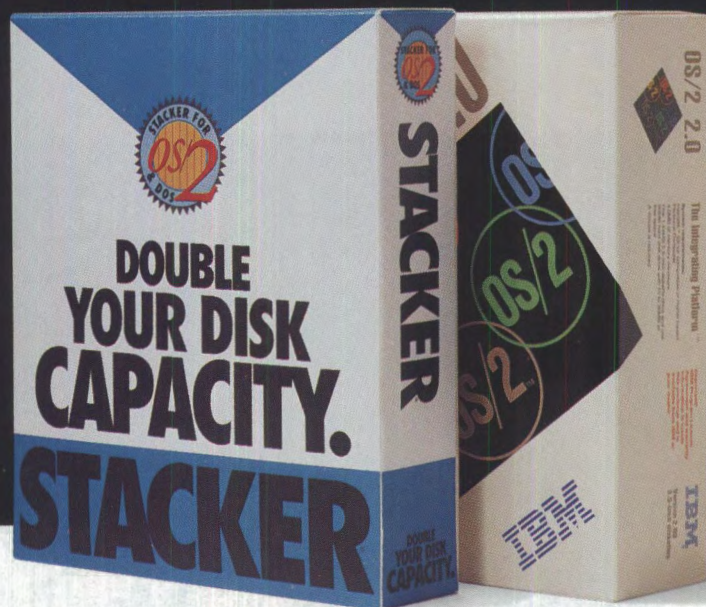
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WINDOWS



With version 2.1, OS/2 opens a door to millions of users who can now run their Windows 3.1 applications with greater performance, power and elegance than ever before. By unlatching the abilities of Windows, OS/2 steps that much closer to becoming the universal system, capable of running DOS sessions, Windows 3.1 sessions and native 32-bit OS/2 sessions, all simultaneously.

BY DAVID MOSKOWITZ

UNLATCHED

Wait a minute, it's not supposed to be this way! The last thing I wanted before lunch was to repeat a test. Something had to be wrong! OK, I'll do it again, only this time I'll double check every step, very carefully. Get everything on both systems ready. Make sure that both systems are in the same condition. Identical hardware. "Check!" Windows, "Ready," Win-OS/2, "Ready." Hit the enter key on both systems at the same time, "3, 2, 1, GO!" the same results! Lunch didn't seem that important any more. Just to be sure I ran a few more tests, each time with the same results. The winner is Win-OS/2. Win-OS/2 is faster than Windows 3.1 and Windows for Workgroups.

This changes everything. Everybody knows that OS/2 2.0 did Windows. And although its support for Windows 3.0 was enough for some, many people considered Windows support in OS/2 2.0 insufficient for their needs. With the release of OS/2 2.1 IBM has delivered on the promise made at Spring COMDEX 1992 when support for Windows 3.1 was first demonstrated.

Today, a user can run applications written for Microsoft Windows 3.1 in OS/2 2.1. It is even possible to run these applications on the OS/2 desktop alongside DOS and native OS/2 programs. All of this is made possible by an agreement between IBM and

Microsoft that gives IBM access to the source code for Microsoft Windows. IBM used the code to create a special version of Windows (called Win-OS/2) that runs under OS/2 2.1. Although IBM will no longer have rights to Microsoft source code developed after September 1993, IBM retains rights to the current code, assuring compatibility with Windows 3.1 applications from henceforth.

Windows 3.1 is basically an updated version of technology first introduced in 1985 which provides a graphical user interface (GUI) running on top of DOS. Because of its close ties to DOS, many of the original design decisions for both DOS and Windows affect developers under the Windows environment. Furthermore, its reliance on a single-tasking base (DOS), can lead to system instabilities; the resulting application crash can bring down the entire system.

IBM wasn't content merely to clone Windows compatibility. IBM wanted to create an environment for Windows applications that would extend the same degree of protection afforded OS/2 applications. The result? An application using Win-OS/2 has some clear advantages over the same application running under Windows 3.1. What follows is a brief overview of some of these benefits.





SPECIAL REPORT

Windows 3.1 Support

OS/2 2.1 provides support for nearly the complete range of Windows 3.1 applications, including hard-to-please Windows multimedia programs. Thus, resource-intensive applications, such as After Dark's multimedia screen savers, run in Win-OS/2. If simple backwards compatibility were all OS/2 had to offer, Win-OS/2 might not be worthy of consideration as a primary Windows environment. But even for dedicated Windows users, Win-OS/2 offers several advantages over Microsoft Windows 3.1.

Preemptive Cooperative Multitasking

Integral to OS/2 is its ability to control and direct system operation. Regardless of the multitasking power of OS/2, the computer has only one CPU that can perform only one task at a time. Multitasking uses the computer equivalent of sleight of hand in which the computer appears to be doing more than one thing at a time. Both Windows and OS/2 provide multitasking but implement it very differently.

OS/2 allows a portion of program code to execute for a specific period of time, then it preempts (or interrupts) the execution and switches to another section of code that is ready and eligible to run. This execution interval is called a time slice and the code sections are called threads.

The mechanism that OS/2 uses to decide which thread executes next is called scheduling. OS/2 provides multiple priority classes to accommodate different system conditions. OS/2 schedules threads with the highest priority before threads with a lower priority. For example, a critical operation such as real-time data collection may have priority over less demanding tasks such as printing. After allowing a thread to run, the OS/2 scheduler preempts it once it has completed its time slice. Then the scheduler moves on to the next highest priority thread.

Windows provides a more primitive version of multitasking. Applications cooperate in the multitasking process. Windows does not limit the amount of time native applications can run nor does it interrupt applications that are running. Rather the application developer must design Windows applications as good citizens who willingly share their time in the environment. If a developer has not taken active measures to grant access to other applications, the entire system can be held captive by a single process. If that process takes a long time (e.g., an intense computation or large block disk input or output) the user must wait until the operation has completed before doing anything else with the system. In a similar situation, the OS/2 user can switch to another task immediately.

Photos: Bob Firth. See page 27.



SPECIAL REPORT

Cooperative multitasking affects not only the user interface, but also time-sensitive operations. If a modem connection is running in the background, an unusually long delay in a foreground process might cause the background data transfer to abort. Other real-time processing operations, such as data collection and multimedia applications may be similarly affected.

Multimedia

Windows applications that run under Win-OS/2 participate in the preemptive multitasking afforded by OS/2. Further, OS/2 provides the ability to overlap operations that aren't possible in DOS or Windows. In the Settings notebook, you will find a DOS VDM setting (INT_DURING_IO) that can be turned ON. This allows the session to receive interrupts (special signals from the hardware) while OS/2 starts a separate thread to handle the I/O (Input/Output) operation.

This results in a technical bit of wizardry that is especially useful to Win-OS/2 multimedia applications. Multimedia applications can continue to talk to special sound or video adapters while reading or writing to the hard disk. A Windows application that


generates sound can actually run better under OS/2 than it can under Windows. Instead of jerky or discontinuous sound while the user works on something else in Windows, OS/2 processes the disk I/O and Win-OS/2 continues to talk to the multimedia adapter unhindered by other activity.

Separate Sessions

In Microsoft Windows, applications share a common address space. Hence the failure of one application can force Windows to generate a General Protection Fault (GPF) in which Windows suggests closing all applications and rebooting the system. In its effort to build a better Windows than Windows, IBM created a way to run multiple Windows applications in separate virtual DOS Machines (VDMs). Today there is a choice. You can elect to have each Windows application run in a separate session or you can allow Windows applications to share a common VDM.

Memory (DPMI, EMS, XMS)

OS/2 2.1 manages memory through a technique called virtual memory. Virtual memory allows overcommitment of memory;



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SPECIAL REPORT

the total amount of memory used by applications may exceed the amount of physical memory installed in the computer. OS/2 provides plenty of room for growth. It can address 4 gigabytes (GB) of memory, although individual programs are "limited" to 512 megabytes (MB) of memory. Of course, to reach those limits, OS/2 must find temporary storage somewhere, so the operating system uses a disk-based file to simulate the memory that isn't physically available. Thus, the practical limit to the amount of memory an application can use is determined by free disk space.

When Microsoft Windows runs in enhanced mode under DOS on an Intel 80386 based system it runs as a DOS Protected Mode Interface (DPMI) server that allows client Windows programs to access up to three times the amount of RAM installed in the computer. Like OS/2, the over-committed portion is stored on disk as virtual memory. However, since many computers are limited to 16MB of memory, Windows is typically limited to a maximum of 48MB of virtual memory.

During the development of Win-OS/2, IBM removed the DPMI server capability from Windows and placed it directly in

OS/2. The result: each DOS session (including Win-OS/2 sessions) can address a maximum of 512MB of DPMI memory under OS/2 2.1. Further, the default for Win-OS/2 in OS/2 2.1 is 64MB of DPMI memory. In addition to DPMI, Windows sessions also support expanded memory (EMS) and extended memory (XMS). So, if you have Windows applications that need EMS or XMS, OS/2 can provide it without adding hardware or special device drivers.

Clipboard

Whether you elect to run Windows applications in common or separate sessions, you can still use the clipboard to transfer information between applications. The default configuration allows any application running in OS/2 to share information with any other application in the system via the clipboard. Thus, you can copy information from a DOS application to an OS/2 application, and from an OS/2 application to a Win-OS/2 session.

Under some conditions you might want to prohibit DOS or OS/2 applications from accessing the Windows clipboard. In this case, you can use a setting that enables two separate clipboards:

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SPECIAL REPORT

one for DOS and OS/2 applications and the other for Win-OS/2 sessions.

Enhanced Mode

Some Windows applications require a special feature known as enhanced mode. It wasn't possible to run these applications under OS/2 2.0. That changes with OS/2 2.1; now you can run almost any Windows 3.1 application. The only exceptions are the applications that use the Windows Virtual Device drivers (VxDs).

No Local Ctrl-Alt-Delete

In Windows 3.1 it is possible for an application to hang while the system remains intact. When that happens, and all other attempts to regain control fail, you can use the Ctrl-Alt-Delete key sequence to terminate the wayward application. If you continue and hit the Ctrl-Alt-Delete keys again, the system reboots. In OS/2 a reboot is not necessary. If you can't close the Win-OS/2 session via normal means you can bring up the Window List (Ctrl-Esc) and close it from there.

But sometimes the situation is more serious than a stalled program. If an application produces a catastrophic error in Windows, the entire system could be in jeopardy. In OS/2 the only thing that is affected by this type of erratic behavior is the single session in which the application resides. This type of system protection is referred to as OS/2 Crash Protection—the system is protected in the event of an application crash.

Speed

If there's one feature that people find most impressive about Win-OS/2, it's that many applications run faster than under Microsoft Windows 3.1. There are a couple of obvious examples in some of the games that are shipped with the Microsoft product. For example the cards in Hearts (a Windows For Workgroups game) leave the playing field almost twice as fast using Win-OS/2 as opposed to Windows. And in Solitaire, the cards bounce faster when you win with Win-OS/2. Of course, Win-OS/2 does not ship with the Windows games (OS/2 has games of its own), but if you already have Windows 3.1 you can install the games to run under Win-OS/2. Life is more than a game, however, and you will discover that many real-world applications run 20 to 30 percent faster under Win-OS/2 than they do on the same hardware under Windows 3.1.

PIF Files and Non-Windows Applications

A DOS program running in a VDM cannot start an OS/2 application. However, under Win-OS/2 any application supported by

the system can be started. For example, you could create a new program item from the Win-OS/2 Program Manager to launch the OS/2 version of DeScribe, the Windows version of Ami Pro or the DOS version of Lotus 1-2-3.

Configuring an OS/2 application under the Win-OS/2 environment is easy; simply create a program item in the Win-OS/2 Program Manager. But for DOS applications you must use the Windows PIF (Program Information File) to describe the DOS environment. This ability to launch and run DOS applications directly from Win-OS/2 allows mixed-mode applications to run properly. Thus, GUI front-end applications for text-based programs (e.g., WinZIP, which provides a graphical front-end to PKZIP) work without problems under Win-OS/2.

Printing

If you've tried to print a long document from within most Windows applications you're already familiar with the delays that prevent you from resuming use of your program. On a slow system (say a 25 MHz 386SX) the delay may seem like an eternity. Even after the application completes the spooling process, the responsiveness of the system depends upon the priority setting of the Print Manager (high, medium or low).

OS/2 and Win-OS/2 provide dramatic improvements in this area. First, in most cases the application output is directed to the OS/2 spooler, not the Win-OS/2 Print Manager. The spooler is a special OS/2 process that works within the preemptive multitasking arena. Further, the OS/2 spooler starts to send documents to the printer even before the application completes the print operation.

As a result, you may see something from the printer before the program completes generating the output. It also keeps you from waiting for the Windows application to finish the printing process before resuming useful work. For those who have not seen this feature in action, it may not sound particularly advantageous, but once you experience the immediate response from the printer, you'll wonder why you accepted anything less.

Developer Possibilities

Thus far, you've seen examples that apply to all Windows users. But more advanced users will discover some less obvious benefits from the Win-OS/2 environment. For example, software developers can use OS/2 as their development platform for Windows applications and get significant productivity improvements over the same development process in native Windows.

SPECIAL REPORT

As a developer, OS/2's preemptive multitasking capability can be used to your advantage. Instead of using a network and a second system to overlap editing and compiling, you can do it all within a single system. You can also use the separate session capability to test Windows applications. If the application crashes, a common occurrence during early testing, you can avoid a system reboot. Instead, OS/2's Crash Protection keeps you running.

If your development projects use higher level Windows development platforms that are less crash prone (e.g., Fox Pro for Windows) Win-OS/2's preemptive multitasking will play a more important role than Crash Protection. You will also appreciate the enhanced memory management features, since each Win-OS/2 session can be assigned its own unique memory space. The increased application performance and shortened development cycles allow you to increase your productivity significantly.

Preserving the Investment

By many accounts there are some 30,000 DOS applications, 7,000 Windows applications and 1,200 OS/2 applications. It's no secret that many of the DOS applications are in desperate need of an upgrade. Instead of committing resources to their character-based applications, software developers turned their attention to Windows and OS/2 applications (the last year has seen more major releases of Windows and OS/2 applications than DOS applications). As a result, many of today's Windows applications provide capabilities not yet available in their DOS equivalents.

But running Windows can sometimes be frustrating, especially when an application crashes. And as activity increases, a crash becomes more likely. Unless the user remembers to save quite frequently, the amount of work that can be lost increases proportionally. Even if the crashes occur infrequently, the results can be devastating. While no system can be absolutely crash proof, OS/2 provides a reliable platform with clear advantages over older technology. In fact, OS/2 2.1 is the only platform that gives you the ability to run almost all applications written for Intel-based systems.

Windows users are already familiar with the continuous demand for application upgrades as the system evolves. And indications are that this trend will continue with all of the upcoming variations on the theme: Win32, Win32s, Win32c, et al. Supporting these platforms becomes expensive for developers who must buy new tools and adapt to the new environments and for users who must pay for the upgrades. OS/2's strength lies in its backward compatibility whether stretching back to OS/2 1.x or

the DOS/Windows environment.

Is there a downside to running Windows under OS/2? Yes. You may need to upgrade existing hardware to have 8MB of RAM and an 80 to 120MB hard disk. In addition, depending upon the sophistication of the user base, some training in the unique features of OS/2 might be appropriate for Windows users (potentially more for DOS users). However, experience demonstrates that the return on this investment in increased productivity justifies the expense.

Over time most people will spend far more for application software than they do for operating system software. Once they've found software that works they don't want to give it up or be forced to change without good reason. OS/2 2.1 preserves the investment in existing software and, at the same time, offers significant improvements in productivity and reliability.

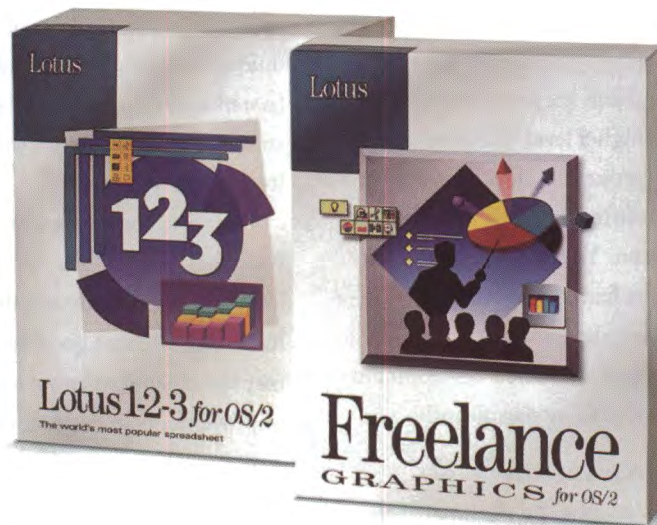
Because I am an engineer, I had to test and retest before I would believe the dynamic improvement OS/2 2.1 affords Windows. For users, however, the dramatic difference should be apparent from the very first sessions. ♦

*David Moskowitz is an OS/2 consultant and an OS/2 advisor for IBM's OS/2 forums on CompuServe. He is the author of *Converting Applications to OS/2* (Brady Books, 1989) and coauthor of the best selling *OS/2 2.1 Unleashed* (SAMS Publishing, 1993). He can be reached through the Internet at 76701.100@compuserve.com.*



Minneapolis photographer Bob Firth has been shooting windows with his camera since he was seventeen. As of late, his passion is for remnants of our rural past. Many of his window photographs will appear this fall in a book entitled, "Landscape of Ghosts" from Voyageur Press, Stillwater, Minnesota, (800) 888-9653.

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US/TOO

Gossip and Chip Talk

A **GOLDEN ACRES.** Did **JOHN AKERS**, former IBM CEO, go off the payroll when new CEO **LOUIS GERSTNER** took over on April 1? Apparently not. As recently as early May, sources say, Akers was still on the payroll advising Gerstner. While Akers has retired from the company, there is no word as to when Akers will officially "retire," from his salary.



DEPRESSING OS/2 2.1. Wasn't it peculiar that *Infoworld* didn't run a review of OS/2 2.1 the week of the unveiling? We hear *Infoworld* couldn't get their hands on a review copy of 2.1 either before or the week after the May 18 press conference in New York. Like *Infoworld*, *PC Week* was also snubbed. In fact, the only reason *PC Week* was able to run a cover story on 2.1 was through a lot of snooping. One *PC Weeker* protested, "Those idiots wouldn't give us a copy!" Only press attending the 2.1 announcement were allowed review copies. But many of those attending could not latch onto an IBM official to interview. For example, **JOEL SHORE** from *Computer Reseller News* couldn't get anyone's attention. No wonder his June 7 column was entitled, "IBM's Big Blue Blunder."

G **GERSTNER TASK FORCE.** **TED SALAMONE**, who heads up the OS/2 Independent Vendor League, has been recruited for an elite five-man "task force" that will advise Louis Gerstner on future business directions for IBM. The review is so broad, even the subject of "computers" will be just a single component. The report is more precisely a review of emerging global businesses such as commodities, transportation and information systems. By the time this column appears, the executive summary should be completed. The task force then stands ready for a fuller presentation in Armonk.

C **CONKLIN REMAINS EDITOR.** Not so fast on bon voyage cards to **DICK CONKLIN**. A correction. Conklin will be retiring from IBM as reported in our last column, but he will remain on as editor of the *OS/2 Developer*, which is slated to go from quarterly to bimonthly soon.



HOTSY TOTS. Speaking of Spring COMDEX press, **DAVE DIX**, the new editor of *Marketing Computers*, set some sort of record at an Atlanta restaurant by dumping almost an entire bottle of Tabasco sauce onto his entree. His incredulous dining partner—who has previously fancied himself a hot sauce aficionado—brought home the bottle as a souvenir of the event.



GATES UNHAPPY ABOUT OS/2. Microsoft chief-tain **BILL GATES** expressed continued hostility toward OS/2 in a brief conversation with *OS/2 Professional* editor **EDWIN BLACK** at Spring COMDEX. Pressed by Black as to when NT would be released, Gates would only reply, "Soon."



CAMELS AT PALM SPRINGS INTERCHANGE. Any truth to the rumor the *OS/2 Professional Interchange* will feature camel rides? CT Meeting Planners, which is staging the event for *OS/2 Professional* magazine, is in fact trying to arrange the rides for the October 17 event as part of the "Casbah" theme. Problem: there are no camels to rent in Palm Springs. CT, however, is still trying. CT, by the way, is the group that staged the successful OS/2 Technical Interchange in Phoenix last February.



TOO MUCH PR? **KEITH LINDENBERG**, the IBM media relations specialist who has been praised previously in this column, was overheard at the Spring COMDEX Team OS/2 Party complaining about the listing of the IBM press conference in the "Official KarenNet Party List." It seems that Lindenberg was upset that too many press would come to the IBM press conference. As if IBM couldn't use lots of press at their events. Microsoft's 1990 Windows 3.0 announcement held at the City Center in NY boasted an attendance of more than 1,000 press. In comparison, IBM's recent OS/2 2.1 announcement in New York was attended by only a hundred or so press. IBM can thank their restricting publicity department. When is IBM going to learn PR?



ASSOCIATING WITH OS/2

People talk about the big picture of OS/2.

But no company views that image more clearly in its sights than Computer Associates, the number one vendor to corporate America. What CA does and doesn't do may be one of the most important bellwethers of OS/2's proliferation.



VENDOR PROFILE

BY EDWIN BLACK

The blues guitar, it is a-thumping loudly over the stereo, and the whole place has the rhythm and even the electricity of a party. But it is a party of one and this is no nightclub, it is the workout room. There in the corner, jackknifing situps to the music is a solitary and sweaty executive, drenching his tee shirt with pain-gain perspiration. Only when he pauses ever so briefly at the apogee of his situp does the wet fabric reveal the name printed across his chest: Computer Associates.

A sweet four-year-old girl has just finished her puzzle, and the smiles are bursting forth under her golden locks. Mommy is working at the computer in the big building. After work, she'll come and take her home. Wait 'til she sees the puzzle. It's all done!

What does a middle-aged exec tightening his abs at 1 PM in a company fitness complex and the simultaneous glory of a child finishing a new puzzle in a corporate daycare center have to do with Fortune 500 and OS/2? Everything. These are the appendages of success. They grow out of the enormous achievement of the world's largest corporate software vendor, billion-dollar Computer Associates, headquartered in Islandia, New York.

CA, as it is affectionately monikered, provides mission-critical software to 90 percent of the Fortune 500. Quite simply, CA's business is to run American business. If the firm were to disappear next Monday, it would have to be reinvented next Tuesday. Otherwise, airline reservations, credit card purchases, mass billings and a thousand other cogs of big business would reboot to a long beep. And it's because CA is so entrenched in the biggest of American businesses, that its well-planned venture into a suite of eight new OS/2 applications foretells the fortunes of IBM's advanced operating system; a fortune sure to become its own self-fulfilling prophesy.

CA began as a mainframe vendor in May 1976, co-founded without venture capital by its current chairman, Charles Wang. In those days, CA operated out of a small office in Manhattan, bartering consulting services for rent and computer time on its clients' computers. By 1981, CA went public. Today, Charles Wang heads up the second largest software company in the world, boasting some 7,500 employees worldwide. Last year, the

Photos: Matt Donohue

company cut the ribbon on a multimillion dollar 63-acre headquarters on Long Island that resembles the 24th century headquarters of Star Fleet Command.

The company now books more than \$1.5 billion in annual revenues. And the chart lines are headed north. For example, third quarter 1992 revenues increased 20 percent over the previous year. That translated to a 37 percent boost in pre-tax income for the quarter that helped make last year CA's best ever.

Clearly, the numbers are crunching sweetly for CA at a time when the computer world's most established companies have been kneecapped in the profit department. Indeed, no balance sheet has been crippled more than IBM's. Why has CA thrived where others have faltered?

Cyclonic change—and the failure to forecast it—is what struck the computer giants. And for many companies, entrenched in their own technology, change is worse than a four-letter word. But for CA, change is its stock in trade. The company learned long ago that “the environment in which [our] business is done is constantly changing.” The last CA annual report boasts, “Our people are not afraid of change.”

That's where OS/2 comes in. A team of CA market specialists has concluded that OS/2 is part of the wave of corporate America's future. The company is preparing for it now. And it comes at a time when the downsizing phenomenon is speeding faster than anyone can genuinely predict.

“Right now, about 75 percent of our business comes from mainframes,” explains Marc Sokol, CA's vice president of product strategy. “About 10 percent is PC software, and the balance comes from everything from the VAX to the AS/400. But,” he continues, “we recognize that our market is changing to smaller products.”

And it ain't happening slowly. CA assessments predict that its business pattern will virtually invert by the turn of the century: only 25 percent mainframe, 25 percent PC, 25 percent UNIX and 25 percent other platforms. “To get from 75 percent mainframe business to 25 percent in so short a period of time,” observes Sokol, “we must commit a



VENDOR PROFILE



Charles B. Wang, co-founder and chairman.



*Jacques Leisy and Gary Slattery,
development managers.
Below: Marc Sokol, vice president
of product strategy.*



significant investment to R&D and marketing for new products.”

In March 1992, CA began examining what platforms would be used in the new downsized computing environment, according to CA development manager Gary Slattery. The conclusion was inescapable: OS/2. Within 90 days, CA formulated what it called “an unprecedented commitment to develop OS/2 products.”

By late June 1992, CA chairman and CEO Charles Wang declared in a company statement: “Our corporate clients are telling us they want to go to OS/2 because it is robust and supports mission-critical applications.” Concomitantly, the company announced that any customer registering CA Windows applications would receive a free version of the same software when the OS/2 version arrived. “Just as we’ve been able to deliver a record number of Windows products, we expect to surpass that achievement for OS/2,” Wang said at the time. Wang has made clear that the first seven products are “just the beginning.” A company release called the decision “a ringing endorsement for OS/2.”

The new CA ensemble is comprised of software in the firm’s three vital areas: systems management, application development and business applications. CA-Unicenter is the system management product. The two application development products are: CA-Realizer, a graphical BASIC development environment and CA-dBFast, an Xbase development language. And the four business applications are: CA-Textor, an executive word processor; Simply Accounting for entry-level accounting; CA-SuperProject to manage projects; and CA-Compete for decision support.

“We’re not betting the ranch on Textor,” asserts Sokol, adding, “Unicenter and Realizer are clearly the strongest products in the suite.” He says that the other products will be bundled. Indeed, Textor is hardly a high-end word processor like DeScribe or the forthcoming WordPerfect 5.2. It seems to fulfill the low demands of the typical executive struggling to streamline his corporate writings: memos, reports, summaries and presentations. CA is positioning Simply Accounting as an entry-level product that corporate users are expected to take home and/or refer to friends.

“Our success will not be built on a single hit,” emphasizes Sokol, “but rather a group of products. It costs us so much to get to this point, the more we can sell to this market the better.” Slattery says that at first he was uncertain about the marketplace. But after visiting the successful OS/2 Technical Interchange last February in Phoenix, which featured eager corporate developers from across the nation, his fears were allayed. CA has internally known the value of OS/2 for development for years, since the company uses the OS as its own development platform.

CA’s commitment is so significant to OS/2 that it has bypassed the cultic enthusiasm or blind devotion fueling many smaller devel-

VENDOR PROFILE

opment efforts. Rather, CA is governed by the business-wise injunction, "Be market driven, not technology driven." A company report explains, "Simply put, we don't look for elegant solutions to nonexistent problems."

CA's confidence in OS/2 is strictly pragmatic. Jay Yesselman, CA marketing director, assures that the demand was so pent up, "our customers didn't even want to wait for full Workplace Shell exploitation, so the porting began. Our customers will now be able to use the platform of their choice." Indeed, the time for OS/2 devotees to worry is when the pragmatists like CA become disinclined to support the platform.

Ironically, despite all the bashing IBM marketing takes, it is the success of IBM's long-term marketing of OS/2 to corporate America that underlies CA's decision. Because IBM has so effectively penetrated the corporate computing scene, CA can be expected to follow IBM's path.

Parenthetically, CA's march behind IBM has important consequences for IBM's shadow box with NT. Microsoft's multi-tasking OS has backed off the average desktop market for what appears to be a go at corporate America. But catering to mission-

critical applications requires more than press hype and even more than great software. It requires a massive decentralized structure that lives where the customers are. That's how CA lives, that's how IBM lives, but that is not how Seattle-based Microsoft lives.

Yesselman is convinced, "NT will not be an overnight success." It may well take NT a year or two once it releases to zap the bugs and spawn the applications that will make Microsoft's OS work for corporate America. Big business will be very reluctant to chance its mission-critical applications going down for a day—or even an hour. Hence, Microsoft has apparently chosen a potentially lucrative market for NT that is either unattainable or unsustainable.

The commitment by CA to OS/2 speaks volumes about the future of OS/2 within corporate America, and on the world's desktops. The only question is whether CA has latched onto a winner in OS/2, or whether OS/2 has latched onto a winner in CA. In a way, all that's important is that the team wins. And right now, Computer Associates is smack dab at the front of Team OS/2. ♦

Edwin Black is editor and publisher of OS/2 Professional.

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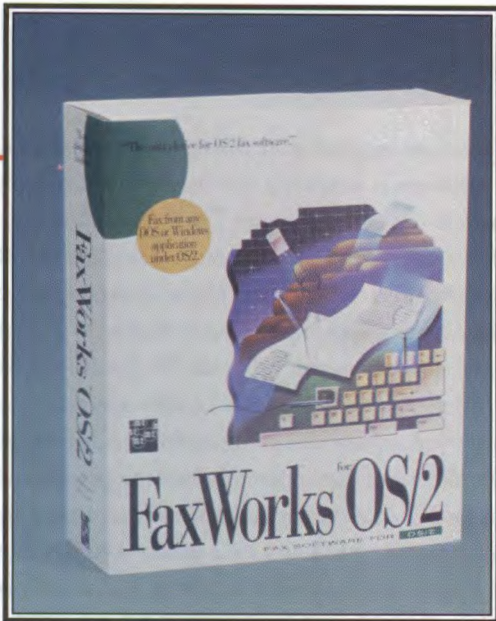
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Q & A

A straight-talk interview on topics of professional concern

EnRiching OS/2

Last March, senior IBM officials asked ex-IBMer William Rich to come out of retirement and assume leadership of a new global marketing effort for OS/2. As such, he was installed as the new number two in the OS/2 power grid, just below Personal Software Products (PSP) president Lee Reiswig. Rich, one of the most trusted and respected members of the IBM family, has ties to the IBM Board of Directors and enjoys the confidence of those above and below him. On May 13, just days after Rich assumed his post as general manager of worldwide sales and marketing, *OS/2 Professional* editor Edwin Black flew to IBM's offices in picturesque Somers, New York, for an unrestricted conversation about the mission and the man so important to the future of OS/2. An edited transcript follows.

EB: William Rich, you've been brought out of retirement to save the day for OS/2 with the mission to take over worldwide marketing and sales at a moment when the operating system's very future is at stake. How does the responsibility feel?

WR: Great! Awesome responsibility. Really, I define it as a set of tremendous opportunities cleverly disguised as a bunch of problems and challenges. There is no question, we have a series of problems we must deal with quickly. But behind that, we have a lot of things going for us. So I am delighted to be here and to be here at this time.

EB: You will be under PSP president Lee Reiswig, and over John Patrick, the vice president who was until now the number two. Why was it necessary to bring a new number two into the operation?

WR: John Patrick is doing a terrific job. There is just too much to do. The fact of the matter is that we don't yet have groove swing in how we merchandise, market or support OS/2. That statement is true for the U.S. as well as Europe, and the Far East. So, as good a job as John was doing, [Personal Systems senior vice president] Jim [Cannavino] and [PSP president] Lee



Q & A

[Reiswig] decided that it was time to bring in someone who could help John and the other key executives around the world.

EB: Why you?

WR: They approached me because for the past year I have been quite active in working with several of IBM's larger customers. And about the third or fourth time that I gave Jim and Lee some advice, they said, "Well, why don't you come back and help?" So here I am.

EB: You say there is "no groove swing." Many would ask if indeed currently there is a real plan—right this minute, as we speak—for the effective marketing of OS/2 to all market segments. Or are you only now going to develop such a plan?

WR: Well, there is a plan. The plan has been developed over the last 90 days. In fact, I was reviewing it yesterday.

EB: The last 90 days. As we speak, it is now a few weeks before Spring COMDEX. So when did you actually get the call to come on down to the fort.

WR: Lee and I started discussions around the end of March.

EB: And when did you know that you were actually getting the assignment?

WR: End of the third week in April. And I started the next day. It had become apparent to both Lee and Jim at that point that more needed to be done and in a more structured way. By the end of this year, we needed a set of repeatable ways to satisfy our customers. We do have a plan. Is it enough? No. Does it hold the potential for tremendous improvement over where we are? Yes.

EB: When will you implement this plan?

WR: The implementation is already under way and will continue during the next 90 days. First, we do what people have already agreed on. At the same time, we're going to be looking at what else we need to do. And in my mind the priorities go as follows: *Number one*, we need to provide the proper level of support for OS/2. Support that goes all the way. From when somebody has a question about a specific problem to doing more with and adding things to OS/2. That's the first thing that we must fix. *Number two*, we then have to enhance the way we market, both directly to people and through others—our dealer channel, for example. *And third*, we must do a better job of merchandising.

EB: You say technically your first day was May 3.

WR: Yes. And the very next day [IBM CEO] Louis Gerstner wanted to know how we were doing. We met in Armonk for about two hours. At the meeting were Lee Reiswig, Jim Cannavino, Ned Lautenbach, who runs our European and Far East operations, Bob LaBant who runs North America and I.

EB: You know the bulletin boards have been rife with speculation about Mr. Gerstner's disposition on OS/2 and its future with IBM. What do you think is his feeling?

WR: I should let Mr. Gerstner speak for himself, but I'll tell you what the meeting was about: do we have the right plans in place to increase our marketing support and merchandising for OS/2?

EB: He understands OS/2?

WR: I found Mr. Gerstner very knowledgeable about the importance of OS/2, its strategic importance to the IBM company and very interested in accomplishing our objectives. In fact, he has a little ThinkPad with OS/2 installed. Lee Reiswig told him that he'd give him a pin if Gerstner can sell 500 copies.

EB: So there is no intent to offload OS/2.

WR: No. OS/2 is here for the long term. Edwin, it would be kind of silly for me to come back and start working 80 to 90-hour weeks if we were in the process of deciding to stop it. The fact of the matter is we're going to significantly increase our investments in dedicated marketing by a factor of two. We're going to significantly increase our investments in customer support by a factor of three.

EB: And yet within the last 48 hours, I've been hearing from key marketing executives that their budgets have been cut by factors of 20. One man said he only has one-seventeenth of the money he thought he was getting.

WR: I don't know who those guys are. I'll tell you in aggregate, the IBM company is going to spend a little more than twice as much for dedicated marketing and support this year versus last year on OS/2 and related products.

EB: Would you say IBM has done a good job with the advertising, marketing and promotion of OS/2?

WR: Prior to the beginning of this year I think we could have done a better job. But I think that there have been a number of things done this year that help.

EB: Better? How so?

WR: I don't think that we represented a clear and concise mes-

Q & A

sage or strategy of OS/2 advantages. I don't think that we were providing the proper level of support for either our customers or people who would market it for us.

EB: What about the independent developers?

WR: I think that the developers did a terrific job.

EB: What about support for the developers? For instance, there is something I call "The Phantom of the Operating System." It's an advertising program designed to promote native OS/2 apps in a number of publications. But the plan and the rollout date have been revised every week since last December.

WR: I'm familiar with it and I'm very aware of its importance. In fact, we spent time on it this morning. I know that we have been trying to improve its ultimate effectiveness. The feedback that I get is we aren't there yet. Much has been done. There's a lot more to do.

EB: Yet as a result, independent developers, such as DeScribe, have not been able to plan their own marketing campaigns because they've been waiting to be in sync with IBM. And it's been delayed every week for half a year.

WR: Now wait a minute, Edwin. I think that one of the things Lee brought to this team that was absolutely crucial was a method of development that empowered that team to do certain things. One of those was to decide when we were ready to ship, based on certain quality objectives. We have not compromised those objectives. Would we have liked to have shipped last December? Yes. Under old IBM criteria, could we? Yes. And we probably would have. And I think that we would have made a terrible mistake. Do we wish that we had done it in March? Yes, however we wanted to wait until we were satisfied. Meaning our team had to be satisfied they had a quality product. Now they do. And now we're going to do it. I regret the fact that we didn't do it sooner. But I am delighted with the fact Cannavino, Reiswig, Patrick and other executives are willing to say we made a covenant to that development team. And we're going to live by the covenant.

EB: IBM has shipped around 2.3 million shrink-wrapped copies of OS/2?

WR: It's somewhere in that range.






EB: There are a lot of pass-on users behind those 2.3 million users. Yet many people believe there is not an effective job of cross-marketing LAN Server, Database Manager, Communications Manager. Indeed, we've heard

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Q & A

that the official IBM policy is that cross-selling to the installed base is like "preaching to the converted."

WR: When you started this interview, I almost remarked "You're interested in just OS/2, but I am vitally interested in OS/2 because of the other products." And it's the products you mentioned.

EB: But what's being done?

WR: I'm not just an OS/2 salesman. I'm selling our LAN systems, I'm going to sell Communications Manager, I'm going to sell DB2, I'm going to sell Netware. I think we bring a unique strength. First, you've seen some of the customer satisfaction numbers for OS/2. So you know that we have a Mac-like following for OS/2. That's one reason why people are so frustrated. They don't think we at IBM understand what a good thing we have. That's why we must do better. Second, the real value of OS/2 is how it relates to other product offerings. OS/2 can use our LAN Server products. OS/2 can take advantage of Communications Manager. OS/2 can network business.

EB: What month do you start to launch this cross-selling activity?

WR: First, we're going to launch the way we support our clients. I really believe that starting in 90 days and completing by year's end we are going to have a world class technical support structure in place. Then, we'll commence the cross-marketing. There are priorities. We must be able to support the developers and users that have stuck with us. When people think about buying OS/2 or one of the other PSP products, they need to say "I know IBM—and once again it means service." Only then do we create the connection in people's mind that OS/2 is really a *family of offerings*.

EB: You have all these problems with past marketing. But all the same people who haven't done a good job to date are still in place running the marketing show.

WR: Come back and see me in 90 days. I think the core members of our marketing group are very evangelical. We in senior management have failed. We have asked too many people to do too many things, and *one* of which was OS/2. That's the reason for focusing now on dedicated people. We have not created a set of processes that allow them to touch our customers in the ways our customers want to be touched. I think that's why Jimmy [Cannavino] asked me to come back.

EB: One of the things that John Patrick has said is that never before in history has a company received so many

outside suggestions on how to advertise and market its own product. Do you think that your advertising is really effective right now, or do you think that it is time for a change?

WR: I just don't know. Has our advertising up to May 1 been effective? Personally I don't think so.

EB: In recent days, you've spent big money to run an ad that devotes a lot of ink to the initials "NT." Did you spend all that

money to leave a visual impression of NT or OS/2?

WR: Of OS/2. If you look carefully the ink has a lot of OS/2.

EB: Are millions of newspaper readers going to look carefully?

WR: Look, NT gets a lot of hype. We need direct advertising that deals with what our customers are hearing. And we're going to do that. Whether our efforts are sufficiently creative, the market will tell us that. But you can expect us to be very aggressive, direct, relevant—and yes even creative—with the marketing and advertising program that rolls out over the next three months. Do we need to do more? Probably. Get something that is more creative still. I think that's an area on which we have to do more work. Yes, we need to be more creative. We need to have broader identification in people's minds than just "OS/2, 32-bit, multitasking and crash protection"—yawn. Those are very relevant technical things. But



Q & A

how does that message relate to someone sitting in a home or in his business?

EB: What did you think of the Fiesta Bowl?

WR: I loved it. And we have the Fiesta Bowl again. It's a four-year commitment.

EB: You loved even those nearly invisible OS/2 patches on the back of the helmets. You spent all this money on the Fiesta Bowl, and yet people I spoke to said that when the game was over they really didn't know what OS/2 was. Some wondered if there was a new computer called "the OS/2."

WR: (Laughter) That's my point. We simply must have a more creative way of relating what OS/2 does.

EB: Does that include all market segments? Many people feel IBM has done a very credible job of getting into the corporate environment. Yet the big criticism in recent weeks is that the average end user—the man you just identified sitting in his home or his office—is not being marketed to. There have even been substantive meetings in this building in the past couple of days with independent developers and John Patrick. They want to form independent companies to market to the end user because these developers do not have confidence that IBM is doing the job. Is there now a plan to reach the end user and do you think there will be a better one soon?

WR: There's no question we need to provide better marketing coverage. For the end user, will we be more effective? Yes. Do we need to go beyond what we have? We're going to take a look at that and see.

EB: Do you believe that IBM currently enjoys the respect and confidence of the OS/2 developer community?

WR: I don't know. You see I haven't talked to any of them yet. I've only been here a week.

EB: Over the past week or two, I've been receiving daily phone calls from people who say they're about to go broke, that they've fired all their employees. That they can't last another three days.

WR: Obviously I think that the people who have been willing to invest in developing for OS/2 need to feel that we keep our promises. They need to understand what we are doing to increase, not decrease, our investments in OS/2. They need to feel that they have an opportunity to be very successful being allied to OS/2 and to trust IBM. Yet I'm sure that there are people who don't feel that way today.

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Q & A

EB: Speaking of people trusting you, I hear your phone number is 1-800-GOD. What about that? How did you get a three-digit phone number?

WR: I've heard that and that's kidding of course. But it is true that I happen to be an ordained minister and a permanent deacon in the Roman Catholic Church. Be careful, I can baptize, marry and bury you. In fact, under certain conditions I can even forgive your sins.

EB: You can?

WR: Generally, I can. But you, I'm not so sure of.

EB: I've heard you have some very special outside activities. Tell us about the Covenant House.

WR: When I left IBM three years ago, I didn't retire in the traditional sense. I had a bout with prostate cancer, which fortunately has worked out very well. But at that time, my wife and I decided that we didn't know how it was going to work out. And so IBM was very good in letting me spend some time working with a nonprofit organization called Covenant House. They work with runaway teens and at the time had some significant problems relevant to their leadership. I spent a year with Covenant House, and I still have some involvement working with them as they continue to meet the needs of homeless teens. I'm trying to get them on a firmer financial basis.

EB: That's God's work indeed.

WR: I think that everybody should have something outside of business, indeed outside our families.

EB: You're talking like the old IBM. You're talking like the IBM that people remember, respect and cherish. But nowadays people talk about the "new IBM." Yet many who speak of the new IBM regret that it has lost some of its most precious traditions of reliability and humanity. Some people even see arrogance.

WR: To the extent that's true, that's too bad. The market and industry has changed very rapidly. We need to adapt to that change, but we can never compromise our character. The number one principle of IBM has always been impeccable, personal integrity. We call that respect for the individual.

EB: What's happened to that?

WR: In my opinion, we got too busy talking to each other. It's not that people were dishonest. We just got too busy talking to each other. The second principle we had was, nobody rests until

Q & A

our customers are happy. That's the urgency to which we need to return.

EB: You can't be user friendly and people insensitive. Arrogance doesn't help.

WR: Right. But I think it's only human nature that when you start to become successful, you start thinking you know more answers than you really do. That's why when you ask, Do we market this product correctly? I answer, not yet. Do we provide the right level of support? Not yet. Does that mean that people have been lackadaisical? I don't think that's it. We have some good people trying. And that's why I'm encouraged. Over the next six months, you're going to see a very different picture. And I mean starting next Monday.

EB: Starting next Monday?*

WR: You don't get to the second month unless you do things right the first month. And we're going to do things right from the first month. And that brings me back to your point. This is an

awesome job. That's because it's really just a marvelous set of opportunities cleverly disguised as incredible challenges.

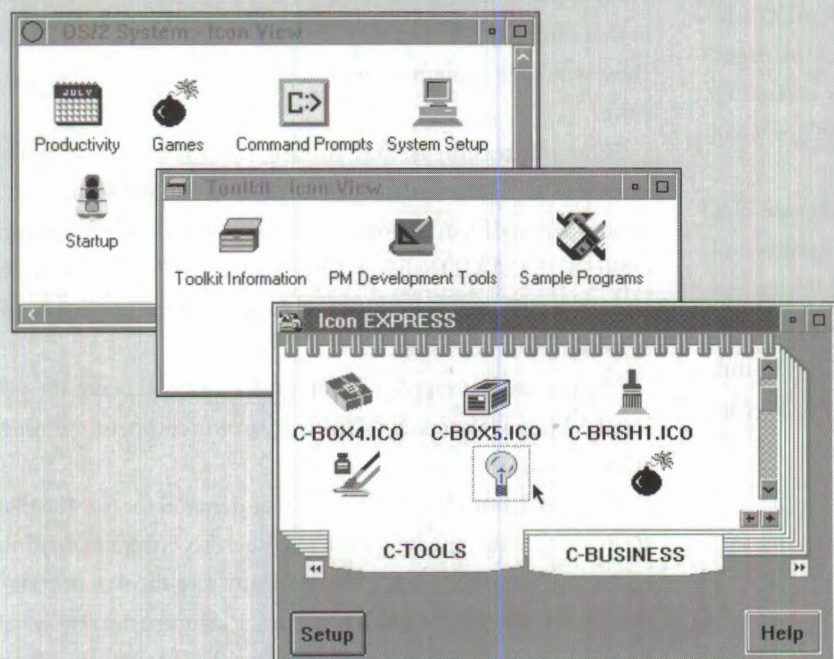
EB: And how do we judge you?

WR: I can't say trust me. But what I can say is, you write down the things that most concern you. Come back in three or four months and let's see how we're doing.

EB: Thank you Mr. Rich. ♦

**That "next Monday" saw the highly publicized rollout of OS/2 2.1, followed by its enthusiastic reception at Spring COMDEX.*

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SHOULD YOU BUY A

Just when should you invest in the power of a 486 to maximize OS/2? Or indeed should you at all? For the business purchaser, the answer may make a big difference in productivity and budget.

Though a 386 system is acceptable for running OS/2, those who have experienced the hand-in-glove feel of using OS/2 on a 486 may find that lesser processors feel more like hands-in-cuffs. If you are convinced that a 486 will make your life easier, but haven't yet purchased one, consider carefully the timing of that purchase. Armed with an appropriate understanding of the market, you could save yourself a good deal of frustration—and money.

Is this the summer to buy a 486? Is it better to wait three months or more? There are some good arguments for OS/2 users to purchase a 486 this summer. There are also good arguments to wait.

"Buying computers can be a bit like buying cars," says John Hastings, president of the American Computer Exchange, a nationwide brokerage service located in Atlanta, Georgia. "The guy who buys a new car every year is getting soaked. The person who buys the used car that guy sells every year is the one getting the deal."

However, Hastings points out that falling computer prices and rapid depreciation are insignificant to the person who manages to use his computer productively. "If your computer is making money for you, then it doesn't make too much difference what you paid. It's justified."

"To some extent it is a mistake to consider the purchase of a computer as a reverse investment," says Charlie Thompson, general manager of the Boston Computer Exchange, a dealership specializing in the purchase and resale of brand-name personal computers. "If you are buying a toy, then by all means wait. But if there's a productivity gain from the purchase, then you have to factor that into the equation."

TO BUY...

If your firm has been considering upgrading to a 486 but needs a little justification, then consider the following arguments in favor of upgrading this summer:

ARGUMENT ONE: 486 prices may stabilize during the next three months, so the incentive for waiting is diminished.

If computer prices fall 10 percent in a given month, you'd want to be sure to wait that month out before purchasing. On the other hand, if you could make an educated guess that prices would fall less sharply or remain roughly stable during the next two or three months, you'd be less inclined to wait. Consider then, one important event that took place this spring.

At the end of April, a judge's ruling opened a door for Advanced Micro Devices to begin production of 486 processors. AMD set its pricing equal to Intel's. Could this imply that, at least at that time, the demand for the 486 processor was so strong that there would be enough business for both companies at the going price?

"Our impression is that Intel is not meeting the market demand," said John Greenagel, director of corporate communications for AMD, in response to that question. While Greenagel confirms that AMD believes demand exceeds supply for 486 processors, he wanted to clarify what the pricing strategy implies—or rather, does not imply.

"As the volume supplier, Intel sets the price. It is not the policy of AMD to take market share away from a competitor through price reductions."

In general, both Intel and AMD see demand for the 486 platform continuing for a long time to come. According to one Intel official, Elizabeth Kemper, the company sees the 486 processor as the mainstream personal computer CPU for the next two years, maybe longer. Greenagel confirms that AMD also has a long-

486 THIS SUMMER?

BY GORDON SCOTT

range outlook for the life of the 486 platform.

"We're breaking ground on a new manufacturing plant in Texas, which won't be ready for production until 1995. We expect the primary product for that facility will be the 486."

Such demand in the market for 486 processors is strong evidence that the prices of computer models powered by them will decline much more slowly, perhaps even stabilize temporarily. In fact, 486 prices, in general, did decline less rapidly through February and March than in previous months.

Consider also that price drops in CPU chips sold to PC manufacturers won't be reflected immediately in prices of PC systems. The market has to absorb the CPU product purchased at earlier prices. So, assuming AMD won't undercut Intel's pricing, and assuming Intel holds to its unbroken tradition of quarterly price changes, it is quite possible that market demand may actually buoy prices or slow the rate of decline this summer.

ARGUMENT TWO: Strong demand today means higher resale value tomorrow.

If you have a lot of demand for 486 computers in the market today, then at some point in the years ahead, the supply of those computers will exceed the market demand, and they'll be worthless at resale time, right?

"It's the reverse of what you'd expect," says Thompson. "Having a large number of computers on the market means a higher perceived value for them. These computers will hold some amount of value as long as large numbers of buyers still have and are using them."

Thompson says that demand actually works in the buyer's favor; much the same way that demand for an operating system attracts programmers, who in turn develop applications, which in turn creates demand for the operating system. So the stronger the demand for a hardware platform, the more useful, and more valuable, that platform is likely to be.

ARGUMENT THREE: The 486 platform will more easily achieve an appropriate return on investment since it will have a greater life span than any previous generation of microprocessors.

The most important factor that validates this argument is the ease of upgrading to which the architecture lends itself. Intel has given indications that even a computer running a 486SX 20MHz microprocessor may one day be upgraded to a later generation chip running at 100MHz. That kind of extended performance capacity is a needed safeguard against the rapid advance of technology.

ARGUMENT FOUR: The 486 platform is now affordable since 486 computers have been around long enough that your firm can purchase used systems.

Especially in the coming months as those perennial bleeding-edge technology adopters jump to the Pentium platform, you can be "the one getting the deal," as John Hastings puts it. By buying one generation behind the latest technology, you avoid the depreciation associated with—to use a car buyer's phrase—driving it off the lot.

ARGUMENT FIVE: OS/2 2.1 includes significant multimedia enhancements which come standard with the system—enhancements best served by the speed of a 486 processor.

If you are planning to upgrade quickly to OS/2 2.1, you may want to strongly consider a concurrent upgrade to the 486 platform. The digital video player and audio enhancements are superior to any other PC system in terms of technical quality. Multitasking might have been simply a nice-to-have feature for 1980s-style computing, but multimedia and multitasking are like Siamese twins: when separated they are both missing something. Get the most of OS/2 2.1's multimedia dynamite by upgrading to a 486.

"Or Not to Buy" on page 44

OR NOT TO BUY...

Convinced that you need a 486 right away? Don't let them swipe your credit card number until you consider these four arguments for waiting for a 486 upgrade.

ARGUMENT ONE: Most users overestimate their need for processing power, and few truly need the power of a high-end system.

John Hastings and Charlie Thompson are two people who know the computer market. Their respective organizations have both maintained an index of used computer prices for the past few years. Their advice to the person who wants to upgrade is: be sure you have the need. Upgrading your computer because you want to have the current hardware isn't wise if your main use of a computer is limited to word processing. To users who insist on upgrading for such a purpose Charlie asks in mock astonishment, "How fast can you type?"

ARGUMENT TWO: Computer prices always fall, and betting on them to do otherwise is risky since any such stabilizing of prices lasts only a short time.

Over the past two years, a combination of events has led to more rapidly declining prices than normal. Personal computer prices had been falling at the rate of about 25 percent each year ever since the '70s. When considered generally, this fact implies that any given computer model could be expected to sell for less than half its original price after three years. Over the past two years, however, you can observe that, on average, a given model sells at half price after only 18 months. At that rate of decline, a user could reap a significant savings by postponing purchase a month or two.

This has important implications for OS/2-based companies eager to upgrade to a 486 platform. In some cases, a wait of just two months can result in a 15 or even 20 percent savings in the purchase price. Clearly, your corporation wouldn't upgrade over the next two or three months if by waiting you could save several hundred dollars per unit. While indications for demand have never been better, most price slowdowns never last more than two months.

ARGUMENT THREE: It would be better to buy a more depreciated system, such as one with a 386-33MHz or 40MHz chip.

These platforms can be acceptable for most OS/2 users, and the prices aren't subject to such large losses in value, since market value for them has already declined significantly.

"There are two large decreases in value over the life of your computer system," says Thompson. "The first drop occurs on the day the company buys its system, and another drop occurs on the day that model is discontinued."

Most 386 systems have already gone through the two events Thompson describes. Consequently, 386s have already suffered their heaviest decreases in system value.

ARGUMENT FOUR: Upgrading a computer system is so costly in terms of time spent buying and selling, deinstalling and reinstalling, that no company should do it unless absolutely necessary.

If your firm upgrades computers less frequently, less down time is suffered, and less time is spent reorganizing the firm's computing environment. This translates into very real added savings. Hence, it really pays for a company to constructively wait for the appropriate time. Besides, the firm might consider just a processor upgrade instead of replacing the whole new system. Several options are available on the market for replacing a 386 processor with a 486 processor via an add-in card. Some of these options cost under \$300.

OS/2 USERS ARE POWER USERS

So there are some of the arguments on both sides. Each user and each company has different circumstances, hence the real answer depends upon the economic, productivity and even personality factors involved. That said, there is no denying that the typical OS/2 user is an early adopter of technology. Early adopters tend to be among that segment of the population which is able to make a computer purchase pay off in one way or another—despite the rapid depreciation.

Which brings up an important issue: the matter of opportunity cost. How much could you be increasing your own productivity—or perhaps revenue—with the purchase of a new system? Twenty percent? For programmers who spend almost half their time on the computer waiting for a compiler, such a gain in productivity is not unthinkable. A 20 percent reduction in compile time can translate into the difference that allows you to beat a competitor to market.

"No way should you stay in a system that isn't making you money," says Hastings. "From a strictly business aspect, you can't afford to own a system that costs you more than you can make with it."

If you are among those who want to upgrade, then you can take

FEATURE

consolation in the fact that the cost of the new computer system can be offset by the value of your current system. That value may be trivial if you are a DOS user who continues to wring out every last drop of usefulness from your XT compatible. But the value could be rather significant if you are an OS/2 user who owns a 386 processor.

INDEXING

To find out exactly how significant, you need look no further than indices provided by either the American Computer Exchange, or the Boston Computer Exchange. Both indices are updated weekly and are published in a number of periodicals. These indices will give you a good feel for what your system is worth on the open market. That information is something that, Hastings points out, most users have trouble determining.

"Ninety percent of the time when a seller advertises his system the price is grossly overstated. Ten percent of the time the price is grossly understated. Nobody hits it on the head."

In addition to providing indices of used computer prices, these organizations facilitate upgrading. The American Computer

Exchange matches buyers and sellers for a nominal fee, acting strictly as a brokerage. The Boston Computer Exchange, on the other hand actually buys and sells used systems.

If your firm decides that a 486 system is the best OS/2 hardware for you, you may want to consider it as a purchase with longevity and buy components from that perspective. For instance, at least one peripheral, the monitor, defies the standard depreciation curve associated with PC hardware. Since a monitor doesn't lose its value as rapidly, buying the largest, highest quality monitor you can afford will boost your system's resale value over time.

Early indications are that the 486 may become the most widely purchased microprocessor of the decade. OS/2's ability to exploit the power of this CPU is quickly evident even after casual use. It's possible that all OS/2 users, at one time or another, will move to the 486 chip. Few will be disappointed. The question is when to make the move. To buy or not to buy? That is no longer the question but whether the slings and arrows and outrageous desire balance the fickle facts of fortune. ♦

Gordon Scott is a contributing writer to OS/2 Professional.

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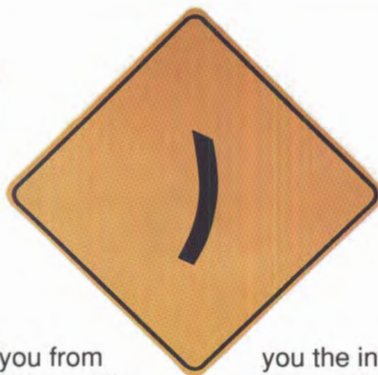
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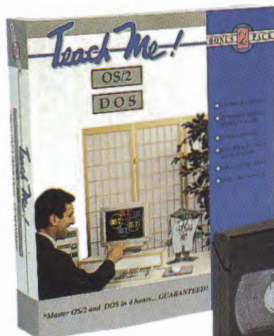
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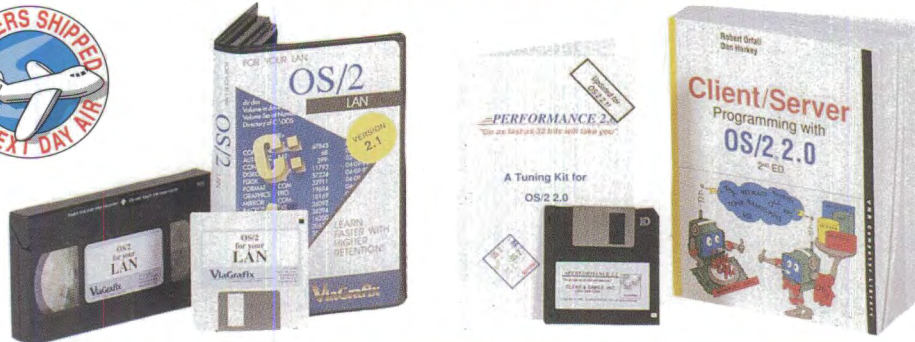
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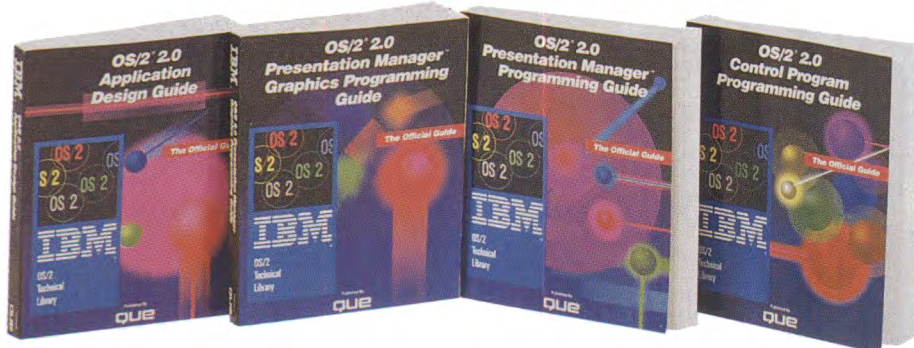
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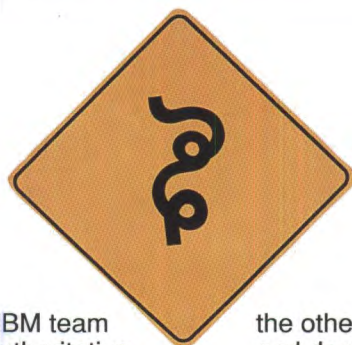
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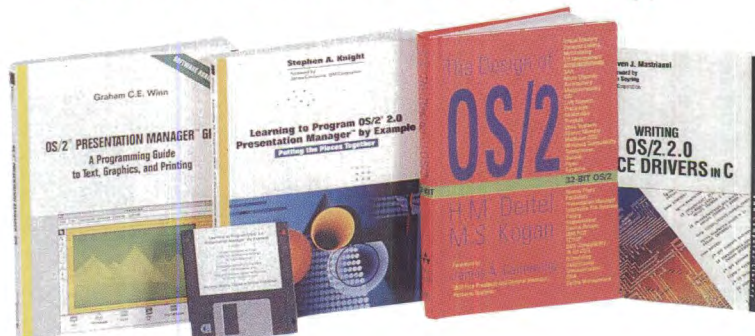
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USER PROFILE

many different programs. A great deal of time could be saved by ending the load times through task switching alone. But there also are lengthy searches through the CD-ROM tax library, monster print jobs and other activities that could derive further benefit from actual multitasking.

In just 15 minutes, Cornwell had reached a verdict and decided OS/2 belonged on every desktop in the firm. Alex Pettit recalls quite a bit of fear at that moment. It must be the way you feel when two friends you introduced decide to get married. What if it ends in divorce? You feel as if you would bear all the blame, even though they made the decision.

The time was November, with the confusing new tax season about to begin in January. "Are you sure you really want to do this?" Alex recalls asking. "What would you do if this were your company?" was the reply.

"I'd go with OS/2," was Alex's candid but nervous reply. Alex had been in his new job for less than a month. Talk about going out on a limb—and just before tax season. Even though OS/2 had essentially sold itself, it was still Alex who had started the ball rolling. After all, it was Alex who, needing a better solution for himself, decided to install OS/2 on his own work system so he could monitor the LAN and get other work done at the same time. It was Alex who had spread the "germ" to the firm's most unyielding accountant.

Had Alex made the right recommendation? If the move to OS/2 succeeded, Alex would receive much of the credit. If the move to OS/2 failed, Alex likely would bear the brunt of the blame, as well as an invitation to seek employment elsewhere, he firmly believes.

Fortunately, Alex, who recently turned 27, is now reaping much of the credit. Knowles Cornwell originally expected a 25 to 40 percent improvement in productivity. During the 1993 January to April 15 tax season, Cornwell measured a 50 percent productivity gain for the firm compared with the 1992 season. For Cornwell, Jackson & Company, OS/2 has been the key to the success story. Now installed on all of the company's 386SX Fiji computers, OS/2 handles virtually everything they throw at it. That includes a few OS/2 applications, as well as a plethora of DOS applications, plus a few arcane and persnickety programs that users love to hate.

In the typical large business environment, OS/2 is installed side-by-side with existing DOS and DOS/Windows systems. At

Cornwell, Jackson, however, the decision was to move the entire company—all 17 people—to OS/2. When asked why, Alex said that he couldn't justify support for two operating systems. Additionally, he noted that OS/2 works as a superset of DOS. Nevertheless, Alex did not throw all caution to the wind. As a safety net he installed the dual boot option on each system, but Alex says that it really hasn't been necessary.

Cornwell, Jackson & Company is gradually replacing DOS software with OS/2 versions. But the nice thing about OS/2, Alex says, is that the operating system itself is the only initial investment you need make. All of the existing software ran great under OS/2—often better than under DOS itself. And all of the existing hardware worked well, too. The fact that upgrading to OS/2 didn't require scrapping all of the firm's newly-purchased 386SX systems was a pleasant surprise. While a staunch member of the OS/2 "faithful," not even Alex had contemplated such a smooth transition.

There's something about OS/2 that turns users into evangelists. At Cornwell, Jackson & Company, the vision for the future embraces small business consulting and re-engineering. Stepping beyond accounting, re-engineering includes proselytizing OS/2 to clients to demonstrate the increased productivity possible with OS/2—precisely the kind of marketing efforts Alex Pettit thinks IBM should be pushing.

Indeed, when asked whether there was anything about OS/2 he didn't like, Alex said that his only real complaint was with IBM's marketing. He thinks that IBM should focus more on firms like Cornwell, Jackson & Company. While small individually, as a group, such smaller businesses provide most of the jobs in the United States, and indeed are the major potential beneficiaries of OS/2. Rather than focusing on the major large accounting houses, Alex thinks IBM's marketing efforts would be much more fruitful if applied to firms like his.

Accounting is a highly competitive business in which small firms are eager to gain whatever edge they can. And as experience at Cornwell, Jackson & Company illustrates, the decision to switch to OS/2 can be made much more quickly than in large firms.

Now, just seven months after Alex Pettit's arrival, much has changed for Cornwell, Jackson & Company, as well as for Alex. He and his wife left good jobs in Chicago with no jobs in the off-

continued on page 57

Accounting for Success

In accounting, success comes by the numbers. But with OS/2, the smell of success transcends even the measurable productivity benefits.

BY HERB TYSON

Less than a year ago, Alex Pettit was spending five hours a day commuting to his job in Chicago—two and a half hours each way. Looking to escape the fabled “rat race” of urban congestion, Alex and his wife left their jobs in Chicago to seek a warmer, saner life in Texas. Today, at Cornwell, Jackson & Company, PC, CPAs, just outside of Dallas, Texas, Alex has shaved four hours off his daily commute. Some of his colleagues insist that his 30-minutes-each-way commute is still longer than it needs to be.

Within a month of landing a job as a Network Telecommunications Specialist (LAN Manager) with Cornwell, Jackson & Company, Alex was in for another kind of shave—a close one—putting his job on the line. Minutes after demonstrating OS/2’s multitasking to co-owner Knowles Cornwell, Alex was told to put OS/2 onto every system in the firm. Alex faced a critical decision: forge ahead into new territory, or play it safe and suggest a more conservative approach. His only guides were instinct and skills learned through his own accomplishments with OS/2.

For Alex, it all began innocently enough at Spring COMDEX, 1992. He was one of many lucky winners presented with OS/2 that day. Just released, OS/2’s impressive “dog and pony” show at COMDEX convinced Alex to try OS/2 on his home system. At the time, Alex was still living and working in the Chicago area. It wasn’t too long after installing OS/2 at home that he decided to test OS/2’s ability to improve his workstyle. Indeed it did, and Alex was beginning to tally up a suc-

cessful track record with the fledgling operating system. By the time Alex got to Carrollton, Texas, he was already well aware of the benefits of real multitasking. Installing OS/2 on his work system at Cornwell, Jackson was the natural thing to do.

Soon after Alex installed OS/2 on his office machine, the local techno-skeptic walked in and wanted to know what Alex was up to. Alex realized mere words could not explain—something about OS/2 resists simple description. You really must use OS/2 to begin to understand its allure. With that in mind (and already overburdened by his workload), Alex decided to let his colleague discover OS/2 on his own. So, Alex took his system up to his colleague’s office and swapped computers, inviting the skeptic to try OS/2 for himself.

In a small company the smell of change quickly travels up the corporate ladder. It wasn’t long before Knowles Cornwell had caught the scent of something new in the by then former skeptic’s office. A quick investigation revealed a new convert to the OS/2 lifestyle—Cornwell was flabbergasted. A strong believer in the benefits of technology himself, Cornwell was intrigued by the fact that OS/2 seemed to have penetrated his colleague’s xenophobic armor.

OS/2 was to face a new trial—Alex set up a personalized demonstration of OS/2 for Cornwell, processing several tax returns simultaneously in different windows, searching the CD-ROM tax library in the background and more. An accountant’s typical day at Cornwell, Jackson, requires running, loading and switching between

USER PROFILE

continued from page 48

ing in Texas—a classic American tale. It's what the '80s Republicans called "voting with your feet." It wasn't easy for his wife to find a new job, Alex relates, since she was a newspaper reporter and Dallas had recently lost one of its dailies. Fortune smiled, however, and now both Alex and his wife are both happily employed.

They'll be happier still when their current house-hunting saga is completed. Maybe then, Alex will be able to return to his other calling. In Illinois, Alex was involved in Boy Scout activities, and was particularly fond of "high adventure" outings that acquaint scouts with the joys of the great outdoors. Scouting provided well-needed relief from Chicago's hubbub and congestion. With office productivity on the rise, and the family settling in, there should once again be time for the finer things in life. That's the OS/2 lifestyle in action.

An interesting aside is the story of Van Van Buren, who joined Cornwell, Jackson a month before Alex. A former IBM employee, the new vice president arrived on the heels of the firm's purchase of over a dozen 386SX Fiji systems. His new co-workers thought he'd try to sell the firm on PS/2s and OS/2. Not wanting to seem too pushy, Van decided to sit back and watch. Perhaps everybody was so busy watching out for Van that Alex's forays into OS/2 caught them completely by surprise. Whatever the reason, the tale of Alex and OS/2 is a tale of success that for the operating system is just another victory—even if by the numbers. ♦

Contributing writer Herb Tyson is a computer industry analyst and consultant whose clients include IBM. He is the author of several books, including 10 Minute Guide to OS/2, 101 Essential Word for Windows Tips and Your OS/2 Consultant.

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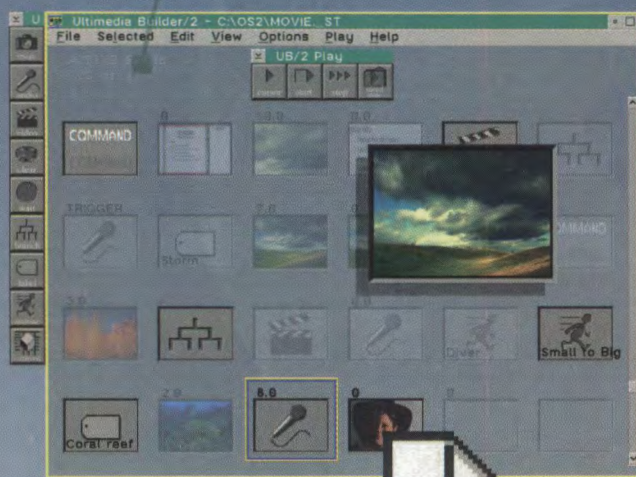
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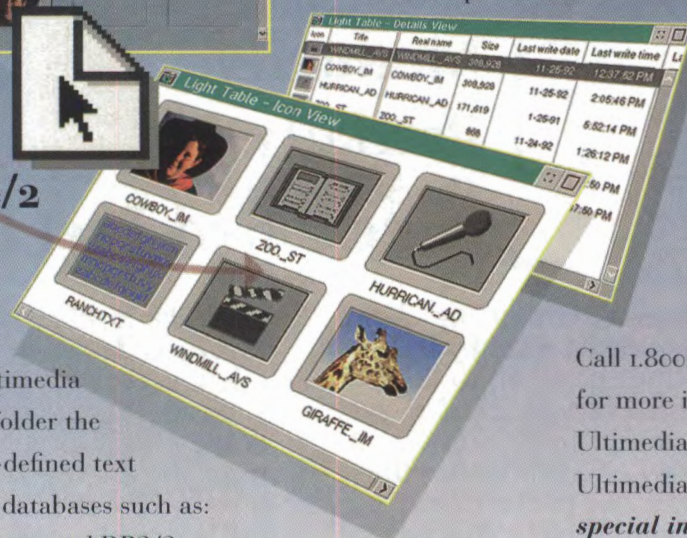
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MULTIMEDIA

Minnesota Twins Kiosk

A HOME RUN FOR MULTIMEDIA

The ability to revolutionize merchandise and ticket sales is being proved every day in Minnesota by none other than the home town team.

BY HANK KIEWER

Baseball fans in Minnesota are the first in the nation to enjoy the convenience of purchasing home game tickets while shopping for groceries or shopping in a department store. They have immediate access to a complete selection of available seats from any of a number of ticketing locations. Purchasers can select from available seats anywhere in the Metrodome and see a view of the playing field from a chosen section before buying tickets. When the fan is satisfied with the view, the selection is confirmed and the credit card account is charged for the purchase. Tickets are printed and delivered on the spot.

The entire operation is run through a group of kiosks based on PS/2s multimedia systems. Rather than store and update data locally, seating inventory and ticket sales are processed by an IBM AS/400 that acts as a central host to the kiosks.

The idea proved effective in a pilot project using three kiosks during the 1992 season. And it was conceived as a money maker not a gimmick. It should come as no surprise to multimedia fans that customers who can see the view of the playing field from a given section of the stadium are more likely to test the vista from several locations and often opt for an upgraded view at a higher price. The Twins expect to realize higher sales from a given num-



ber of "enhanced" tickets as a direct result of this multimedia service.

According to Michael North, president of North Communications, "This is a perfect marriage of technology and need," giving the customer 24-hour access to the best box office located conveniently at a nearby supermarket.

No doubt part of the initial success is due to the intuitive and entertaining approach used to guide the fan through the process of selecting seats and making the purchase. Full motion video from a laser disk provides video action to attract prospective customers to the kiosk.

The process is started by touching the screen. As with ATM machines, the serious user continues the process by inserting a credit card and responding to instructions. In a clever marketing approach, the voices and images of Twin's center fielder Kirby Puckett and broadcaster John Gordon, guide the fan through the process of choosing a game, price range, seat location and method of payment, all activated through the touchscreen. After selecting the location and number of tickets, the fan confirms the selection and the tickets are immediately printed and dispensed to the customer.

This innovative marketing tool is being watched by other major league teams and the entertainment industry as a whole. If the

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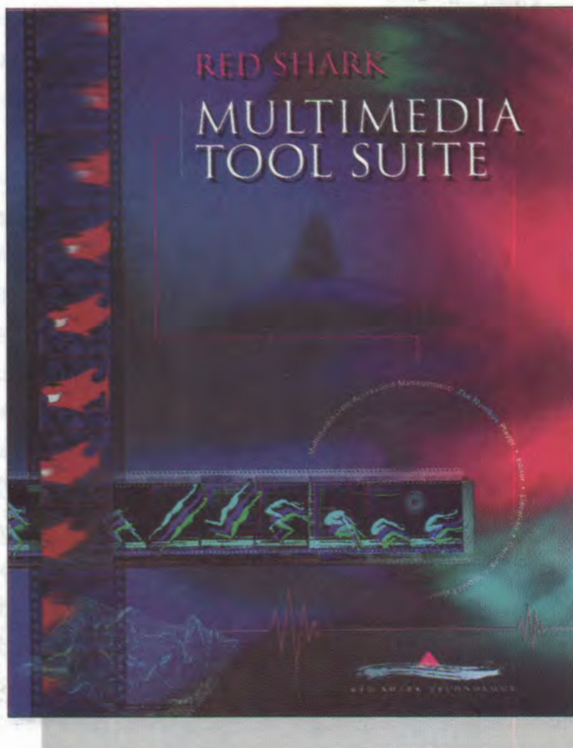
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MULTIMEDIA

idea takes hold, as it almost certainly will, we all may soon see a major addition to the way we gain access to entertainment. I have never enjoyed standing in a long line at the box office to pick up tickets purchased by phone, and this approach promises to let me avoid that hassle.

You don't have to be a baseball fan to see that the Minnesota Twins kiosk is a good example of putting today's technology to work. Inside the kiosk shell you will find off-the-shelf technology: a modem to link the kiosk to the AS/400, a laser disk video reader, a credit card reader, a ticket printer, a touchscreen and a PS/2 to tie it all together. The video, images and voice are stored on devices at the kiosk site. Consequently they are available to the kiosk application without being sent over a phone line. Information that is exchanged between the kiosk and the central site is relatively low in volume and can be adequately communicated via ordinary modems and phone lines. The information that is exchanged via the phone line is essentially the same information that is involved in selling tickets by phone when the order taker uses a workstation connected to the central site. The kiosk serves much the same function as the person taking the call by informing the purchaser of the options available, taking the credit card number, recording the number and location of the seats requested and then completing the sale. In this case, the kiosk goes one significant step farther by printing and delivering the tickets.

Any application that can draw information from a central database and link it to images stored at the kiosk or local PC can take advantage of existing technology to provide this type of service or marketing flavor. I suspect that many computer applications running today on minis or mainframes that use display workstations to provide a service to end customers in the form of information or the sale of a product that can be delivered by mail or special delivery are candidates for multimedia enhancement. The enhancement will be especially valuable when the customer can access the service directly without the need for a trained workstation operator.

Remember, a kiosk can be available at all hours and placed in strategic locations—especially important for the entertainment industry and our increasingly hectic society. Automatic teller machines (ATMs) provide proof of that lucrative concept. Indeed, the Twins kiosk is similar to an ATM in many respects.

You don't have to be in baseball to hit a home run for your business using multimedia kiosks—even if it took the Minnesota Twins to prove it. ♦

Contributing writer Hank Klierer is a PC and AS/400 consultant and owner of Rochester Systems Advisors, Rochester, Minnesota.

INPUT

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tisements for nonexistent software are nothing more than an IBM publicist's rantings.

You sound like an IBM press release.

Please stop sending this. It offends me.

Don Feinstein
San Jose, CA

Thanks, kudos and comments

Thank you so much for *OS/2 Professional*. I've enjoyed reading issues that belong to friends, and I hate having to return them! Now I have my own copy. It is an excellent source of information. (I am *constantly* trying to introduce others to the OS/2 system.)

Kelly M. Gustetter
Atlantis, FL

As a 61-year-old computer novice with only four and a half years of personal computer experience and one year of OS/2 use, I have removed Windows 3.0 from my hard disk, have migrated all of my DOS programs into OS/2 HPFS and I am now a true multitasker. Who says you can't teach an old dog new tricks?

I look forward to many more issues of *OS/2 Professional*.

William Gee, MD
Allentown, PA

From Russia with love

I had the honour to meet Editor Edwin Black at the IBM OS/2 Technical Interchange in Phoenix. Unfortunately, I did not have a chance to attend the breakfast sponsored by *OS/2 Professional*. We had to leave Phoenix for Russia in the morning of March 3. But I was deeply impressed by the friendly and business-like atmosphere that reigned at the conference. The high technical level of the conference allowed me to obtain a lot of information on OS/2. Hardly could I have received such an opportunity in Russia. My professional satisfaction was reinforced by the impression from the ele-

gance of Pointe Hilton at South Mountain and picturesque landscapes of Arizona. It is difficult for me to express with words the feelings I experienced during my stay in Phoenix.

At the conference I received two issues of *OS/2 Professional* and have completely read both issues. I think your magazine is the publication I have been looking for. My favorite articles are special reports—"The Future of OS/2" [November 1992 Special Report] and "DOS Users Can Have Their Cake and Eat It Too" [January Special Report]. I enjoyed especially informative DOT EXE reviews of IBM C Set/2, IBM Workframe/2 and the OS/2 Developer's Toolkit. The interview with John Soyryng gave me confidence that I am learning the operating system of the future. The same opinion was expressed by my colleagues and other Russian programmers who have read articles from both issues. Thank you and your staff for this very interesting collection of information.

I am looking forward to receiving future issues. I wish you every success.

Dr. Pavel G. Romanovsky
Yaroslavl, Russia

[Editor's note: If you enjoyed the Phoenix Interchange, we hope you'll be able to attend the OS/2 Professional Interchange in Palm Springs, October 17-20.]

Dvorak's seventh

For an industry guru, John Dvorak's seventh suggestion for promoting OS/2 [March/April, Dvorak's View] sure sounds backwards. Since 32-bit addressability is quantum leaps better than 16-bit, why should PC users be saddled with 3.5" diskettes that have only twice the capacity of the current standard? The 3.5" floptical with 21-megabytes capacity is much better but not by much. Maybe Sony's MD (Mini-Disc) about 2.5" can be adapted for computer use. In any case, any diskette with less than 100 megabytes capacity is just insufficient for today's

and tomorrow's data storage needs.

Gurus are supposed to look ahead not stand still!

Francis Hsu
Piscataway, NJ

Thanks very much for doing an excellent job making people aware of what OS/2 is and what it can do for them. It seems that IBM dropped the ball on the media blitzes BUT that's OK as long as you have John Dvorak writing "Seven Suggestions for Promoting OS/2" [Dvorak's View, March/April]. The people in the IBM labs can concentrate on making OS/2 v2.1 bullet-proof while John sweats the marketing plan with Jim Cannavino.

Working in MIS, I've been an OS/2 user since version 1.2 but we are just starting to roll OS/2 version 2.0 out to end users. We use OS/2 in a networked environment, attaching to both Novell and an AS/400. Initially, we had some difficulties getting information from IBM, Novell and various software vendors about running applications under OS/2. Your magazine should be a help in this regard and possibly influence some of the software vendors who haven't yet realized that Redmond, Washington, isn't the exclusive home of the GUI.

I was surprised to see some folks with well-known bylines on your team, like John Dvorak and especially William Zachmann who I always thought was an IBM basher when he was at *ComputerWorld*. Your readers can look forward to quality pieces. Please keep up the good work and I'll wait by the mailbox for monthly editions of *OS/2 Professional*.
Rick Flagler
Keene, NH

Carpal tunnel

I read with interest your article on carpal tunnel syndrome and repetitive strain injuries [March/April, Special Report]. As the author of *Carpal*

continued on page 103

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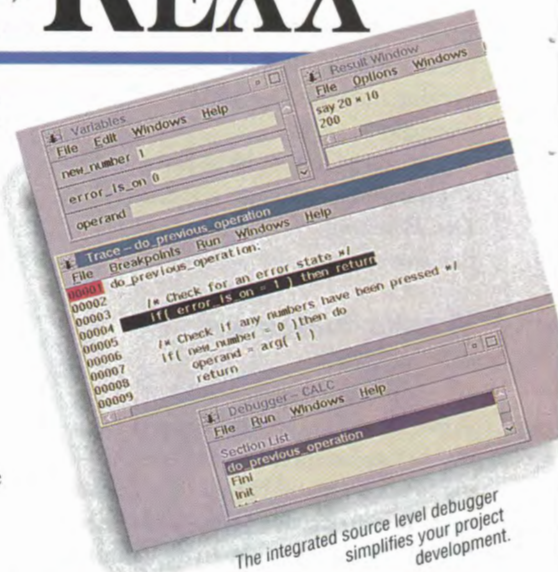
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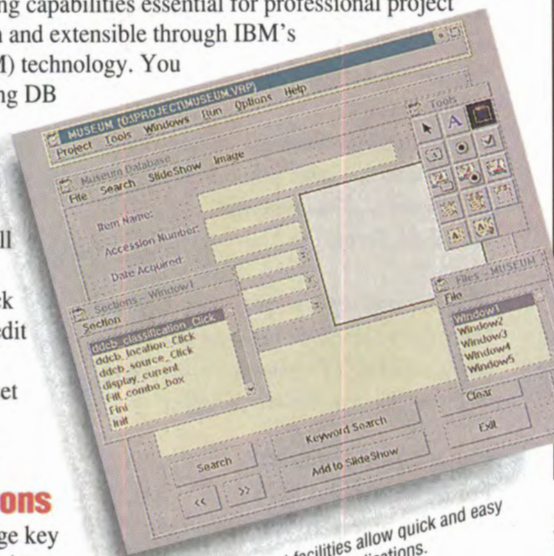
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The Multithreaded Presentation Manager Application

BY CAREY GREGORY

In the first article on this subject I presented a very simple PM program that could be built in a single day [March/April Code Cache]. I also offered the warning that the only robust method for accessing files within a PM program is to use a second, non-PM thread to handle file I/O. The reason: accessing a file always poses the threat of a significant delay, such as when the file resides on a diskette that's not inserted. Since a PM program is required to process every message in one tenth of a second or less, waiting for a user to insert a diskette is guaranteed to violate the rule. The end result is a PM program that becomes sluggish, behaves erratically or even hangs. Why such erratic behavior? While your program is waiting for the user to push in the diskette, it's not servicing its message queue. When a PM program ceases to service its message queue, it locks up the system message queue as well, thereby preventing every other PM program from servicing its message queues. The result can be a dead, unresponsive system until you force the offending application to close. Future versions of OS/2 may reduce the vulnerability of the single system message queue, but there will never be anything it can do to improve poorly written applications.

Multithreading

One solution to the problem is to take advantage of OS/2's single most distinguishing feature—multithreading. This is where any similarity to DOS and Windows ends, and where the value of a preemptive multitasking operating system becomes apparent. Having more than one thread in a program is very much like executing two or more programs simultaneously. The primary difference between a multithreaded program and two separate programs is that the threads in a single program share a common address space, while separate programs are completely isolated and protected from each other. Only by the explicit use of a shared memory block can two separate programs access the same memory. However, multiple threads in a single program have no such limitation. Each is simply a function within the program, and for the most part can be written just like any other function.

In order to illustrate the usefulness of multithreading capabil-

LISTING 1

FileOpen()

```
static void FileOpen(HWND hwnd,
                    GLOBALDATA *pGlobalData)
{
    FILEDLG fd;

    /* initialize the file-open dialog box */

    memset(&fd, 0, sizeof(fd));

    fd.cbSize = sizeof(fd);
    fd.pszTitle = "Open";
    fd.pszOKButton = "Open";
    strcpy(fd.szFullFile, "*.");
    fd.fl = FDS_CENTER | FDS_OPEN_DIALOG;

    /* Get the name of the file to open. */

    if (!WinFileDlg(HWND_DESKTOP,
                    pGlobalData->hClient, &fd))
        return;

    if (fd.lReturn != DID_OK)
        return;

    strcpy(pGlobalData->szFileName,
           fd.szFullFile);
    pGlobalData->sCloseFile = FALSE;

    /* Start the file input thread. Note that the
    Borland compiler expects only a stack size,
    while the Microsoft compiler allows both a
    stack pointer and size. */

#ifdef __BORLANDC__
    if (_beginthread(ReadFileThread, 4000U,
                    pGlobalData) == -1)
#else
    if (_beginthread(ReadFileThread, NULL, 4000,
                    pGlobalData) == -1)
#endif
    {
        WinMessageBox(HWND_DESKTOP, hwnd,
                     "Can't start file input thread.",
```


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ities, we're going to take the PM program from the March/April Code Cache and add the ability to open and display the contents of a file. While these examples use 16-bit compilers and libraries (which are still in wide use by corporate developers), the principles apply to 32-bit programs. As already mentioned, accessing a file directly from a PM thread is hazardous, so we'll need a second thread to handle all file access. Adding a second thread to a PM program requires three components: starting the thread, a function to represent the thread and a means of communicating between threads.

Starting a Thread

Starting a thread in OS/2 is almost trivial. The easiest way is to use the `_beginthread()` function which is supplied with your compiler's runtime library. If necessary, you can use `DosCreateThread()`, but `_beginthread()` is generally much easier to use since it handles the details of allocating and deallocating stacks. In order to start a thread, you first need to determine a good place to do so and, in the example program, the `FileOpen()` function is the logical place for this. Listing 1 shows the modified versions of the `FileOpen()` function which now uses a dialog box to get the file name from the user and then calls `_beginthread()` to start the file management thread. The standard File-Open dialog box can be invoked with a call to `WinFileDlg()`, which is supplied with the OS/2 Toolkit. This function will load and display the familiar dialog box that displays a list of available files and allows the user to select one. Also shown in Listing 1 is the modified `FileClose()` function and a new function, `CalcLinePosition()`, which is used for painting the screen. See Listing 1, page 63.

After returning from the `WinFileDlg()` function, first check to see that the user selected a file and, if so, call `_beginthread()` to start the thread. The `_beginthread()` function has only one parameter allocated for passing data to the thread function, but the sample thread will need at least two parameters: the name of the file to open and a handle to the client window. The client window handle is required for communications between the file access thread and the PM thread. In order to pass these parameters, simply encapsulate them in the `GLOBALDATA` structure and pass a pointer to this structure as the single parameter.

In addition to the thread parameter, notice that the call to `_beginthread()` passes one or two stack-related parameters. The first (used only in the 16 bit version) is a null stack pointer. The `_beginthread()` function will allocate a stack automatically if the stack pointer is null. The second stack-related parameter is the

```
        "ERROR!", 0, MB_OK |
        MB_ICONEXCLAMATION);
    return;
}

/* Disable the File-Open menu item. */

WinSendMsg(pGlobalData->hMenu,
            MM_SETITEMATTR,
            MPFROM2SHORT(ID_FILE_OPEN, TRUE),
            MPFROM2SHORT(MIA_DISABLED,
            MIA_DISABLED));

/* Enable the File-Close menu item. */

WinSendMsg(pGlobalData->hMenu,
            MM_SETITEMATTR,
            MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
            MPFROM2SHORT(MIA_DISABLED,
            FALSE));

return;
}
```

FileClose()

```
static void FileClose(HWND hwnd,
                      GLOBALDATA *pGlobalData)
{
    int i;

    pGlobalData->sCloseFile = TRUE;

    /* Enable the File-Open menu item. */

    WinSendMsg(pGlobalData->hMenu,
                MM_SETITEMATTR,
                MPFROM2SHORT(ID_FILE_OPEN, TRUE),
                MPFROM2SHORT(MIA_DISABLED,
                FALSE));

    /* Disable the File-Close menu item. */

    WinSendMsg(pGlobalData->hMenu,
                MM_SETITEMATTR,
                MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
                MPFROM2SHORT(MIA_DISABLED,
                MIA_DISABLED));

    /* Free the text buffers */

    for (i=0; i<pGlobalData->sLineCount; i++)
        free(pGlobalData->pszText[i]);

    /* Reset screen buffer elements. */

    pGlobalData->sTopLine = 0;
```


CODE CACHE

```
pGlobalData->sLineCount = 0;
memset(&pGlobalData->rclUpdate, 0,
       sizeof(pGlobalData->rclUpdate));

/* Force a repaint of the entire screen to
erase it. */

WinInvalidateRect(hwnd, NULL, FALSE);

return;
}
```

CalcLinePosition()

```
static void CalcLinePosition(HWND hwnd,
                             GLOBALDATA *pGlobalData,
                             short sLineIndex, RECTL *prcl)
{
    /* Get the client window's dimensions. */

    WinQueryWindowRect(hwnd, prcl);

    /* Calculate the position of the text on the
client window. */

    prcl->yTop -= (sLineIndex -
                  pGlobalData->sTopLine) *
                  pGlobalData->sCharHeight;
    prcl->yBottom = prcl->yTop -
                  pGlobalData->sCharHeight;

    return;
}
```

LISTING 2

ReadFileThread()

```
static void ReadFileThread(void *pv)
{
    GLOBALDATA *pGlobalData;
    FILE *fp;
    char *psz,
          szBuff[256];

    pGlobalData = (GLOBALDATA *)pv;

    /* Open the file. */

    if (!(fp =
          fopen(pGlobalData->szFileName, "r")))
    {
        /* Couldn't open the file - Notify the
client window procedure and terminate. */
    }
}
```

size of the stack required. Stack sizes are a somewhat fuzzy area with no hard and fast rules, but in general you'll need a minimum stack size of 2K. If your thread uses large runtime library functions such as `fprintf()`, calls very deeply nested functions or declares large arrays as automatic variables, you'll need a larger stack. I generally start with 4K and increase or decrease the size as needed.

The File Thread

Listing 2 shows the thread function, `ReadFileThread()`. As you can see, a thread function is much like any other function. In fact, there's so little difference that I always use the word "Thread" as part of the function name clarify just that the function should run as a separate thread. When `ReadFileThread()` is entered, keep in mind that your program is now really two programs. Thread 1, the PM thread, is still executing. It has just returned from the `_beginthread()` call. Thread 2, the `ReadFileThread()` function, is also executing. For all intents and purposes, the execution of the two threads is completely simultaneous. At the lowest levels of the operating system only one thread executes at any given moment, but you have very little control over that, and in any case it may not always be true. As multi-CPU computers come into common use, your threads may indeed execute simultaneously. See Listing 2, this page.

By definition, the `ReadFileThread()` function receives as its only parameter a generic void pointer. In our example, this pointer is actually a pointer to the client window's `GLOBALDATA` structure so we immediately cast it to the proper type. The general flow of this function is to open a file, read the file line by line and transmit the data to the PM thread for display. Accessing a file can be accomplished with just about any set of file functions you prefer. In this example the `fopen()` family is used, but you could just as easily use `open()`, `DosOpen()` or your own library.

Inter-Thread Communications

Communicating with the PM thread is the interesting part of the `ReadFileThread()` function. Any thread can use the `WinPostMsg()` function to post a message to a PM message queue: a fact which you can use to your advantage. Unlike `WinSendMsg()`, which requires the calling thread to have a message queue, `WinPostMsg()` requires no message queue on the part of the sender and can be used by non-PM threads. This provides a simple, one-way method of communicating between PM and non-PM threads. PM also allows you to define your own messages, so two new messages are defined in the header (see Listing 3). The first

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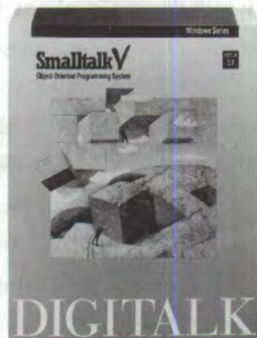
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```

WinPostMsg(pGlobalData->hClient,
           UM_ENDOFFILE,
           MPFROMSHORT(errno), 0);
_endthread();
}

/* Read the file & transmit each line to the
client window. */

while (fgets(szBuff, sizeof(szBuff), fp))
{
    /* Check the termination flag. */

    if (pGlobalData->sCloseFile)
        break;

    /* Remove the newline if present. */

    if ((psz = strchr(szBuff, '\n'))
        *psz = '\0';

    /* Allocate a text buffer and post it to the
client window. */

    psz = malloc(strlen(szBuff)+1);
    strcpy(psz, szBuff);
    WinPostMsg(pGlobalData->hClient,
               UM_LINEOFTEXT,
               MPFROMP(psz), 0);

    /* With a very fast disk it's possible to
post messages faster than the PM thread can
paint the screen. So call DosSleep to give up
the remainder of our time slice in order to
give the PM thread time to paint. */

    DosSleep(0);
}

/* Close the file & signal end-of-file to the
client window. */

fclose(fp);

WinPostMsg(pGlobalData->hClient,
           UM_ENDOFFILE,
           MPFROMSHORT(errno), 0);

_endthread();
}

```

LISTING 3

```

#define CLASSNAME      "MyClientClass"

#define ID_FRAME        10

#define ID_FILE         100
#define ID_FILE_OPEN    101

```

message, `UM_LINEOFTEXT`, passes data to the PM thread. The second message, `UM_ENDOFFILE`, signals completion of the thread. (The `UM_` prefix stands for User Message. It's generally a good idea to distinguish between your messages and PM messages.) A user-defined message is created by defining a constant with a value greater than the constant `WM_USER` (hence the inclusion of `WM_USER+` as part of the definition). The meaning of a user-defined message and any parameters associated with it are completely up to you. PM will never act on a user-defined message. See Listing 3, this page.

Like all PM messages, user defined messages have two parameters (`mp1` and `mp2` in the example). These variables are defined as type `MPARAM`, which can be safely treated as either a pointer or a long integer. For the `UM_LINEOFTEXT` message, pass a pointer to a null-terminated string in `mp1`, and leave `mp2` unused and set to zero. Likewise, for the `UM_ENDOFFILE` message, pass a completion code in `mp1`, leaving `mp2` unused and set to zero. The completion code will be either zero for a normal end of file or a non-zero error code returned by the file subsystem.

The `ReadFileThread()` function begins by opening the file named by the caller. If the file can't be opened, it immediately posts a `UM_ENDOFFILE` message to the client window with `mp1` set to the error number returned by the file system. The thread then simply terminates by calling `_endthread()`. Although a simple return statement will terminate a thread, it's advisable to end a thread with the same subsystem you used to start the thread.

If the file is successfully opened, `ReadFileThread()` begins reading the file one line at a time. For each line of text read, `ReadFileThread()` allocates a buffer with `malloc()`, copies the line of text to the allocated buffer and then posts a `UM_LINEOFTEXT` message to the client window, passing a pointer to the text buffer as a parameter. Since the `ReadFileThread()` function has no way of knowing when the client window procedure has actually received and processed the message, it can't free the text buffers. Freeing the text buffers is left up to the client window. Notice that on each pass through the loop, the `sCloseFile` flag is checked, and, if it is true, we fall out of the loop immediately. This flag allows the client window procedure to interrupt the non-PM thread if necessary. For example, if the user decides to exit the application or close the file while it is being read, the client window procedure can simply set the flag to halt the secondary thread.

When `ReadFileThread()` reaches the end of file, it closes the file and posts a `UM_ENDOFFILE` message to the client win-

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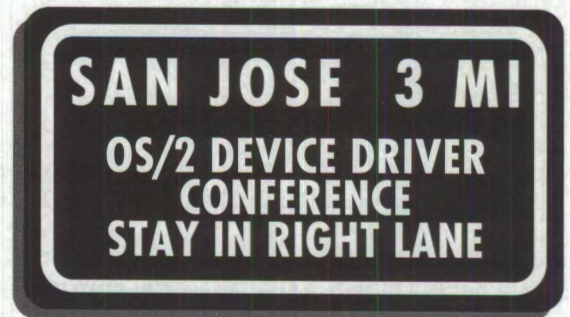
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```
#define ID_FILE_CLOSE 102
#define ID_FILE_EXIT 103

#define MAXLINES      100

#define UM_LINEOFTTEXT (WM_USER+1)
#define UM_ENDOFFILE   (WM_USER+2)
```

LISTING 4

ClientWndProc()

```
static MRESULT EXPENTRY
ClientWndProc(HWND hwnd, ULONG msg,
              MPARAM mp1, MPARAM mp2)
{
    int          i;
    short        sError;
    char         szErrBuff[128];
    GLOBALDATA *pGlobalData;
    HPS          hps;
    RECTL        rcl,
                rclText;
    MRESULT      mr;

    switch (msg)
    {
        case WM_CREATE:
            pGlobalData=(GLOBALDATA *)PVOIDFROMMP(mp1);
            return (ClientWndInit(hwnd, pGlobalData));

        case WM_CLOSE:
            /* Check to see if a file is currently open
             by querying the state of the file-close menu
             item. */

            pGlobalData=(GLOBALDATA *)
                WinQueryWindowPtr(hwnd, 0);

            mr = WinSendMsg(WinWindowFromID
                (pGlobalData->hFrame, FID_MENU),
                MM_QUERYITEMATTR,
                MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
                MPFROMSHORT(MIA_DISABLED));

            if (LONGFROMMR(mr) != MIA_DISABLED)
            {
                if (WinMessageBox(HWND_DESKTOP, hwnd,
                    "Close file and exit?",
                    "File is open",
                    0,
                    MB_YESNO |
                    MB_ICONQUESTION) == MBID_YES)
                    FileClose(hwnd, pGlobalData);
                else

```

dow to inform it that the operation is complete. The thread then simply terminates by calling `_endthread()`.

Client Window Message Processing

The modified version of `ClientWndProc()` with the code to handle the two user-defined messages is shown in Listing 4, along with the necessary changes required to handle the `WM_PAINT` message. When a `UM_LINEOFTTEXT` message is received, the data is inserted into a screen buffer. Although you could draw the text in the window immediately, PM will require further redraws at other times. (For example, when the window is uncovered, moved or sized.) Therefore, nothing is gained by painting the text immediately. Instead, when a new line of text is received, the window procedure saves the data and calculates the window location where the text should be placed. If the text falls below the bottom of the window, the window is scrolled upward to make room for the new line. The position of the new line is then added to the update rectangle and the section of the window described by the update rectangle is invalidated with a call to `WinInvalidateRect()`. When a portion of a window is invalidated, PM generates a `WM_PAINT` message in order to repaint the invalidated region. The advantage of this indirect approach is that PM can optimize paint messages by combining multiple paint messages into a single paint message. This greatly enhances performance, and reduces screen flicker caused by excessive repaints. See Listing 4, this page.

Handling of the next message, `UM_ENDOFFILE`, is straightforward. There's little that needs to be done beyond checking for an error code and informing the user if an error occurred. In order to display an error we take advantage of the `WinMessageBox()` function. `WinMessageBox()` is useful for displaying very simple dialog boxes that require nothing more than a confirming button selection from the user. This application, for example, simply displays the error code that was returned and allows the user to acknowledge it with an OK button. When calling `WinMessageBox()` you specify a title for the dialog box, message text and a set of style flags which allow you to select among various buttons and icons to be displayed.

The last change necessary for our client window procedure is the handling of the `WM_PAINT` message. Since PM has no way of knowing what the client window should look like, it sends your client window procedure a `WM_PAINT` message whenever the window needs to be repainted. As mentioned earlier, the need to paint a window can be caused by a number of events, and can occur

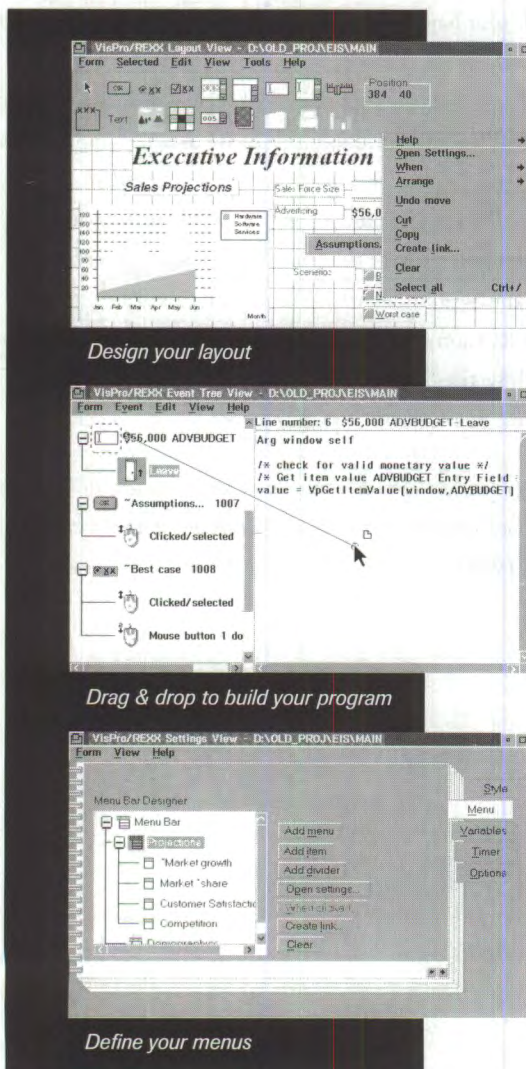
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```

    return (MRFROMSHORT(0));
}
WinPostMsg(hwnd, WM_QUIT, 0L, 0L);
return (MRFROMSHORT(0));

case WM_PAINT:
    pGlobalData = (GLOBALDATA *)
        WinQueryWindowPtr(hwnd, 0);
#ifdef USE_32_BIT
    hps=WinBeginPaint(hwnd, NULLHANDLE, &rcl);
#else
    hps = WinBeginPaint(hwnd, NULL, &rcl);
#endif
    WinFillRect(hps, &rcl, SYSCLR_WINDOW);

    /* Calculate the coordinates of the first
    line of text on the screen. */

    CalcLinePosition(hwnd, pGlobalData,
        pGlobalData->sTopLine,
        &rclText);

    /* Now paint every line from the top
    visible line to the last line. PM will
    automatically clip any drawing that falls
    outside of the update area. */

    for (i = pGlobalData->sTopLine;
        i < pGlobalData->sLineCount; i++)
    {
        WinDrawText(hps, -1,
            pGlobalData->pszText[i],
            &rclText, SYSCLR_WINDOWTEXT,
            SYSCLR_WINDOW, DT_LEFT);

        rclText.yBottom -=
            pGlobalData->sCharHeight;
        rclText.yTop -= pGlobalData->sCharHeight;
    }

    /* Reset the update rectangle. */

    pGlobalData->rclUpdate = rclText;
    pGlobalData->rclUpdate.yTop =
        pGlobalData->sCharHeight;
    pGlobalData->rclUpdate.yBottom = 0;

    WinEndPaint(hps);
    return (MRFROMSHORT(0));

case UM_LINEOFTEXT:
    /* This is a user-defined message posted by
    the file input thread. mp1 contains a pointer
    to an array of text to be displayed. */

    pGlobalData = (GLOBALDATA *)
        WinQueryWindowPtr(hwnd, 0);

```

several times during a program's execution. Your program should be prepared to completely repaint the client window at any time.

The painting logic in the example is exactly as you might expect. The invalidated area of the screen is erased, then the program steps through the screen buffer and draws each line of text. The sTopLine variable is the array index of the first visible line of text in the screen buffer, so the algorithm starts there and continues to the end of the buffer. Throughout this process, the WinDrawText() function draws each line. Although WinDrawText() accepts foreground and background colors as parameters, with rare exception you should use the indexes from the system palette such as SYSCLR_WINDOWTEXT rather than explicit colors such as red or blue. Remember that the user can control screen colors through the operating system. If you hard code an explicit color, you'll find that the output disappears when the color you chose as a foreground color happens to be the same as the color selected by the user as a background color.

The sample program leaves plenty of room for improvement. The most obvious, and probably the most useful, would be the addition of scroll bars so the user can move around in the text. Another useful feature would be multiple client windows that allow the user to view more than one file, or several sections of a single file. In the September article I'll extend this example further, and take a look at some of the more advanced features of PM and OS/2, including the System Object Model (SOM) and specific 32-bit features. See Listing 5, page 74. ♦

Carey E. Gregory is a technical consultant and president of Gateway Technologies Corporation, a Canton, Connecticut, firm specializing in OS/2 since 1988.

CODE CACHE

```

/* Save the data in the screen buffer. */

if (pGlobalData->sLineCount < MAXLINES)
    pGlobalData->sLineCount++;
else
{
    /* buffer is full, discard top line
    to make room */

    free(pGlobalData->pszText[0]);

    for (i = 0;
        i < pGlobalData->sLineCount-1; i++)
        pGlobalData->pszText[i] =
            pGlobalData->pszText[i+1];
}
pGlobalData->pszText
    [pGlobalData->sLineCount-1] =
    (char *)PVOIDFROMMP(mp1);

/* Calculate the position of the new line
of text. If it's below the bottom of the
screen, scroll the window. */

CalcLinePosition(hwnd, pGlobalData,
    pGlobalData->sLineCount-1,
    &rclText);

```

```

if (rclText.yBottom <= 0)
{
    if (pGlobalData->sLineCount < MAXLINES)
        pGlobalData->sTopLine++;

    WinScrollWindow(hwnd, 0,
        pGlobalData->sCharHeight, NULL,
#ifdef USE_32_BIT
        NULL, NULLHANDLE, NULL, 0);
#else
        NULL, NULL, NULL, 0);
#endif

    /* Add the space vacated by the bottom
    line to the update rectangle. */

    pGlobalData->rclUpdate.yTop +=
        pGlobalData->sCharHeight;
}
else
    pGlobalData->rclUpdate = rclText;

// Tell PM to repaint the invalidated area.

WinInvalidateRect(hwnd,

```

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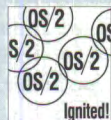
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CODE CACHE

```

        &pGlobalData->rclUpdate, FALSE);

    return (MRFROMSHORT(0));

    case UM_ENDOFFILE:
        /* This is a user-defined message posted by
        the file input thread indicating end-of-file.
        mp1 contains an error code. If an error
        occurred, display a dialog box with an error
        message. */

        pGlobalData = (GLOBALDATA *)
            WinQueryWindowPtr(hwnd, 0);

        sError = SHORT1FROMMP(mp1);
        if (sError)
        {
            /* Notify the user. */

            sprintf(szErrBuff,
                "Error %d accessing %s.",
                sError, pGlobalData->szFileName);
            WinMessageBox(HWND_DESKTOP, hwnd,
                szErrBuff, "ERROR!",
                0, MB_OK |
                MB_ICONEXCLAMATION);

            /* Do cleanup. */

            FileClose(hwnd, pGlobalData);
        }
        return (MRFROMSHORT(0));

    case WM_COMMAND:
        pGlobalData = (GLOBALDATA *)
            WinQueryWindowPtr(hwnd, 0);
        switch (SHORT1FROMMP(mp1))
        {
            case ID_FILE_OPEN:
                FileOpen(hwnd, pGlobalData);
                break;

            case ID_FILE_CLOSE:
                FileClose(hwnd, pGlobalData);
                break;

            case ID_FILE_EXIT:
                WinPostMsg(hwnd, WM_CLOSE, 0L, 0L);
                break;
        }
        return (MRFROMSHORT(0));

    default:
        break;
}

return (WinDefWindowProc(hwnd, msg,
    mp1, mp2));
}

```

ClientWndInit()

```

static MRESULT ClientWndInit(HWND hwnd,
    GLOBALDATA *pGlobalData)
{
    FONTMETRICS fm;

    // Save the pointer to the global data
    block.

    WinSetWindowPtr(hwnd, 0,
        (void *)pGlobalData);

    /* Guarantee the state of the file-open and
    file-close menu items. */

    WinSendMsg(pGlobalData->hMenu,
        MM_SETITEMATTR,
        MPFROM2SHORT(ID_FILE_OPEN, TRUE),
        MPFROM2SHORT(MIA_DISABLED,
            FALSE));

    WinSendMsg(pGlobalData->hMenu,
        MM_SETITEMATTR,
        MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
        MPFROM2SHORT(MIA_DISABLED,
            MIA_DISABLED));

    /* Get character height for screen painting
    calculations. */

    GpiQueryFontMetrics(WinGetPS(hwnd),
        sizeof(fm), &fm);
    pGlobalData->sCharHeight =
        (short)fm.lMaxBaselineExt;

    /* Initialize the screen buffer control
    variables. */

    pGlobalData->sTopLine = 0;
    pGlobalData->sLineCount = 0;
    memset(&pGlobalData->rclUpdate, 0,
        sizeof(pGlobalData->rclUpdate));

    return (MRFROMSHORT(FALSE));
}

```

LISTING 5

/* This listing shows the required changes to the original example program's include files, declarations, and function prototypes. Note that the original program was built as a 16-bit application using Microsoft C 6.0A. In order to build the current example as a 32-bit application using Borland C++ for OS/2, simply define the constant USE_32_BIT on the compiler

CODE CACHE

```
command line. */

#define INCL_PM    // include all PM con-
structs
#define INCL_DOS  // & all base o/s con-
structs

#include <os2.h>
#include <stdio.h>
#include <memory.h>
#include <stddef.h>
#include <errno.h>
#include <malloc.h>
#include <string.h>
#include <process.h>

#include "dos2pm.h"
```

Data Definitions

```
typedef struct _GLOBALDATA
{
    // global program data
    HAB  hab;      // anchor block handle
    HMQ  hmq;      // message queue han-
dle
```

```
HWND  hFrame,      // frame window handle
      hClient,     // client window handle
      hMenu;       // menu handle
RECTL rclUpdate;   // update rectangle
char  *pszText[MAXLINES]; // screen buffer
short sLineCount,  // line count
      sCharHeight, // character height
char  szFileName[CCHMAXPATH];
                          // input file name
short sCloseFile;     // abort flag
}
GLOBALDATA;
```

Function Prototypes

```
int cdecl  main(int, char **);
static HWND  CreateWindow(GLOBALDATA *);
static MRESULT EXPENTRY ClientWndProc(HWND,
                                      ULONG,MPARAM,MPARAM);
static MRESULT ClientWndInit(HWND,
                              GLOBALDATA *);
static void  FileOpen(HWND, GLOBALDATA *);
static void  FileClose(HWND, GLOBALDATA *);
static void  ReadFileThread(void *);
static void  CalcLinePosition(HWND,
```

continued on page 102

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KASE:VIP—for Presentation Manager Version 1.0

REVIEWED BY TODD B. CROWE

Have you ever wished you had a tool that could write all the tedious, repetitive parts of your application for you? Well, KASEWORKS, Inc.'s KASE:VIP for Presentation Manager is such a tool. KASE:VIP is KASEWORKS' second generation of CASE (Computer Aided Software Engineering) software for the OS/2 Presentation Manager. Based on patented KASE (Knowledge Assisted Software Engineering) technology, KASE:VIP allows you to easily design the GUI front end and other components of your mission-critical client/server applications.

Earlier versions (called CASE:PM) consisted of a visual prototyper, a knowledge base and a code generator. The visual prototyper allowed developers to design all of the visual elements of an application within a single interface. The code generator took the developer's design and, with the assistance of language implementation details from the knowledge base, generated source for the application. KASE:VIP enhances this software development process by adding an object-oriented interface and design approach. KASE:VIP replaces the visual prototyper with a desktop organizer and an extensible set of "snap-on" designers. Each designer is a separate, specialized dynamic link library that can be used to create application components.

KASE:VIP can generate C, C++ or COBOL source code. The target language is determined by the knowledge base used. The various knowledge bases are available as separate versions of KASE:VIP (additional bases may then be added without charge).

Snap-on Designers

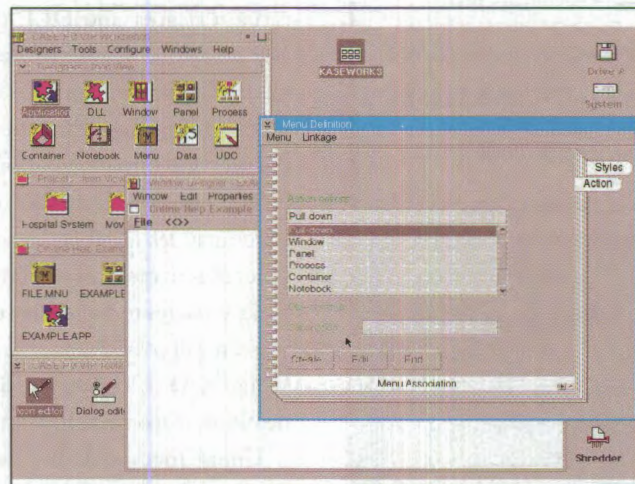
KASE:VIP's designers are similar to the OS/2 icon editor and the dialog box editor included with the IBM OS/2 2.0 Developer's Toolkit. The designers are much more powerful and have a wider scope than the simple Toolkit editors, however. Each

designer visually and interactively collects specifications for application components from the developer and saves them in a resource file. Thereafter, each component may be created and saved separately or within other components. To help speed the process, many of the designers allow you to test the components (objects) quickly without generating and compiling the application. When the design specifications are complete, a special designer generates source for the application.

Ten designers are currently included with KASE:VIP. There are designers for creating window, panel, menu, notebook, container, data object and user code components, a process designer and two special designers which incorporate all of the components of the application and provide an interface for the code generator.

The first five designers are very much like plain resource editors in many respects. They have customized graphical editors for the type of component they operate on and they allow you to visually test the components you create. But they also integrate with and may contain links to other types of components. Suppose, for example, that the application you want to create will consist of a primary window, a pull-down menu and a dialog box linked to an item in the menu.

To start the process, you might invoke the window designer and set up the window attributes for your primary window. Next you would build the prototype pull-down menu (menus may be defined interactively by simply clicking on dummy menu items within your prototyped window and specifying attributes through dialog boxes as shown in Figure 1 above). While setting up the menu, the dialog box (or panel as they are called in KASE:VIP) may be linked to a menu item by specifying a panel "action" and linking the menu item to a preconstructed panel. Each of the objects in



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DOT EXE

this example may be preconstructed or designed on the spot.

The data object, user code and process designers are the glue that binds the other components together and theoretically allows KASE:VIP to generate complete, fully functional applications. You can use the data object designer to create data structures that other components use for communications and state saves. Of course, KASE:VIP cannot provide every bit of functionality you may need. So, you can create your own code fragments and add new features to KASE:VIP through the user code designer. The process designer brings the elements together by linking a list of components so that they will execute sequentially in the completed application; process objects can run in the main thread or in a secondary thread.

KASE:VIP generates code from only two types of objects: application and dynamic link library components, created with the application designer and DLL designer, respectively. Both provide essentially the same function except that one generates source for applications and one for DLLs. These designers combine the specifications from the other designers, additional settings from the user and implementation details from the knowledge base to create complete, commented source code. The resulting source code includes all of the resource, header, definition, make and other files necessary to build the application. Thereafter, you can make changes to the source code and (here's the really neat trick) you can still go back and make changes with the KASE:VIP tools. When KASE:VIP regenerates the source from your new specifications, it won't disturb any of your source modifications.

Unlike many CASE-oriented tools, KASE:VIP requires no run-time libraries. Although the initial price is high, KASE:WORKS places no restrictions on distribution of the generated source. If you distribute the resulting applications internally or even commercially, you can do so royalty free.

Snap-on designers make KASE:VIP a highly extensible, object-oriented tool. Its modular design approach allows it to be used in work group development environments and promotes reusability. And its ability to regenerate source code changes ensures that KASE:VIP will not be relegated to the role of a simple application prototyper, but instead extends its utility throughout the application's life cycle.

Trouble in Paradise

Every rose has its thorns, but fortunately KASE:VIP's are not too sharp. When I first started using KASE:VIP I was dismayed when bugs seemed to appear at nearly every turn. But a Corrective Service Diskette (CSD), which has been incorporated into a remastered version of KASE:VIP released early this year, has resolved most of the problems. Still, some flaws remain.

DOT EXE

Besides the itinerant bugs, KASE:VIP has some annoying characteristics which detract from its utility. The most annoying feature: KASE:VIP generates only one core source file (for example, one .c source file for the C version). Of course, resolving this limitation may not be trivial, but it is disturbing to generate a large application and find a single several hundred kilobyte C source file. Another limitation is absence of format style customization for the generated source. Organizations with strict coding standards will either be stuck with the style generated by KASE:VIP or be forced to find a way to manually reformat the source code.

The documentation is another of KASE:VIP's weak points. The printed documentation is essentially a reformatted version of the online help. While this is not necessarily a bad approach, the online documentation I have seen tends to be long on explaining what is obvious and short on telling users what they want to know. So it is with KASE:VIP; for instance, many of the designers have common features, so significant portions of the documentation repeat what has been said in other chapters. I hope this practice does not become the trend with OS/2 applications' documentation.

Coming Attractions

Though KASEWORKS appears to be promoting the idea, there are as yet no third party snap-on designers available for KASE:VIP. According to a company spokesperson, however, several new designers are in the works. A SQL designer is due in

July and will be integrated into the base product. Optional CICS OS/2 support is due in the third quarter. Support for the IBM C Set ++ class libraries is expected by the end of the year, and SOM support should be available by early next year.

KASE:VIP is a very powerful development tool. The graphical, object-oriented interface is both easy to learn and highly extensible. KASE:VIP's intelligent design approach and functionality make it suitable for many work environments and applications. For the serious developer or departmental programming staff who can afford the up-front investment, KASE:VIP for Presentation Manager is highly recommended.

.....
Todd Crowe is an independent OS/2 software developer and the owner of Peer Intelligence based in Inver Grove Heights, Minnesota.

KASE:VIP for Presentation Manager Version 1.0

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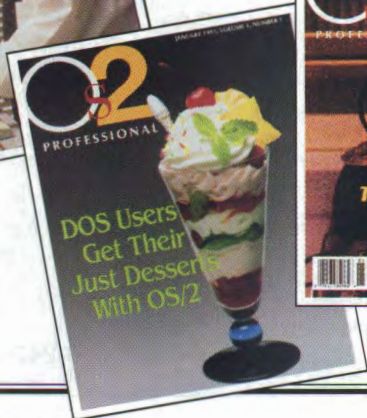
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HyperACCESS/5

REVIEWED BY BRADLEY DYCK KIEWER

While much of the attention given OS/2 applications centers around 32-bit Presentation Manager or Workplace Shell applications, there are a number of functional 16-bit, text-mode applications that are worth consideration. HyperACCESS/5 3.0, a communications program from Hilgraeve, Inc., is one such program.

The pace of modem communications seems leisurely next to the souped-up processor and network transfer rates sported by many of today's systems. As a result, most remote services rely on character-based data transmissions rather than the much higher data volumes required for binary graphics transmissions. Until graphics-based services (such as Prodigy) become more popular, graphics-based communications, while perhaps more visually appealing, will not really be necessary for most communications work. If you can live with an application that is feature rich, but lacks the uniform look and feel of a windowed application, HyperACCESS/5 just might fit the bill. (You can, of course, run HyperACCESS in a window, but it will still sport the full-screen interface.)

Not only does HyperACCESS/5 lack a CUA-style interface, it is dramatically different than the popular QMODEM/PROCOMM-style interface. As a dyed-in-the-wool QMODEM user, it took a while to become comfortable with the HyperACCESS/5 controls. But with a little practice the benefits of an OS/2-based system kept me away from QMODEM and its DOS-mode problems.

Consider, for example, the 16550 communications chip on my PS/2 Model 80. Unlike the older 8250/16450-based serial ports, which buffer only one incoming character at a time, the 16550 can store up to 16 characters while the computer is busy with other tasks. As modem communications push beyond 9600 bps, even the fastest multitasking systems sometimes have trouble serving the serial port quickly enough under moderate to heavy processing loads. The result—lost characters and/or increased transmission times as the two communicating computers resynchronize. This was particularly problematic under OS/2 2.0, which didn't give DOS applications access to the 16550 buffer.

Even with the improved DOS communications support in OS/2 2.1, the session may still need tweaking to get the best possible performance. Furthermore, the processing overhead

required by the DOS session may significantly affect other multitasking operations in your system. As a result, your best bet may be to upgrade to an OS/2-based communications package. The question then becomes, "Will the OS/2 communications program meet your needs?"

HyperACCESS/5 has features that should satisfy some of the most demanding users: extensive customization, a scripting language and extensive file transfer protocol support. But even beginners will find helpful features in the package. Installation, for example, was simple and (for the most part) self-explanatory. There was one question that could be confusing—the install program asks whether your system will use a standard or shared port. However, neither the help screen nor the installation manual explains that a shared port refers to a modem accessed through a LAN server.

The phone book comes preconfigured for a number of popular electronic services including CompuServe, MCIMail, GEnie, BIX and more. You simply fill in your local access number to the service and tell HyperACCESS/5 to dial the number. HyperACCESS then prompts you for your logon name and password and proceeds to generate a new logon script. The next time you call, HyperACCESS/5 automatically handles the logon.

This approach can compromise security in an office setting, however. Anyone with access to the computer could simply look at the script files with a word processor or file browser to glean the passwords. Fortunately, HyperACCESS/5 uses a source/compile feature for its scripts. You can mitigate the security risk by erasing the source .HP file, leaving only the binary encrypted .RDY files in your system. The scripts will still run, but you won't be able to make changes (unless you keep a backup copy of the source file on diskette or tape).

HyperACCESS/5 uses its own unique scripting language called HyperPilot. This may be disappointing to those die-hard OS/2 users hooked on REXX (a general purpose control language included with OS/2). The HyperPilot language seemed robust, but felt somewhat awkward. It bears little resemblance to other general-purpose (or even application-specific) languages I have used, which made for a steeper-than-expected learning curve. The task is further complicated because HyperPilot does not support single-step debugging. The script debugger can jump to the

line of the script that caused an error, but this may not help much if the error resulted from a stray chain of events that occurred earlier in the script. Hence, a single-step mode would make it much easier to catch problems early in the development cycle.

The host mode, where the computer running HyperACCESS/5 can act something like a miniature Bulletin Board System (BBS), is another area that could use some enhancement. Nevertheless, HyperACCESS/5 has some very commendable host features. Profiles can be individually tailored with a wide selection of security options. Drive and directory access can be broad (the entire system or specific shared directories) or very narrow (individual directories for each user). And the system can accept an incoming call or require a callback based on the password.

Password? That's right. The entire security system is password based. You can associate a user id with a password, but it is essentially ignored (except for cheery little messages that greet the user). Any caller who knows (or guesses) an existing password can gain access to the system unless the call-back option is set. Thus, each user must have a unique password. I would much rather have a system based on user id verified by password.

The command-driven operation of the host mode is another disadvantage to many users. When you connect to a HyperACCESS/5 host, you are greeted with a prompt that resembles the infamous DOS C:\>. From then on, using host mode is similar to using DOS. For example, the commands COPY, DIR, DEL and so on perform the equivalent DOS action on the host system. An additional command, HELP, prints a reference list of other available commands, including the all-important transfer protocol commands: e.g., ZSEND filename to send a file from the host to the caller via the ZMODEM protocol, or ZREC for the host to receive a file from the caller via ZMODEM. Other protocols (such as XMODEM and YMODEM) are designated by the leading character (e.g., XSEND and YSEND). It's an archaic, but workable system.

HyperACCESS/5 supports most of the popular file transfer protocols including XMODEM, YMODEM, ZMODEM, Kermit and CompuServe QuickB. The program also supports a proprietary method called HyperProtocol that features on-the-fly data compression. The only protocol that gave me trouble was CompuServe QuickB. HyperACCESS/5 refused to upload binary QuickB files to the CompuServe mail system (but QuickB worked without problems when uploading to forums or downloading). A fix for this bug should be available (along with other minor changes and fixes in HyperACCESS/5 version 3.1) by

the time this issue of *OS/2 Professional* goes to press.

Aside from my disenchantment with the scripting language and the host mode, I found much to admire in HyperACCESS/5. I particularly like the customization options available for each entry in the phone book. This extends from simple but extremely useful parameters such as terminal emulation, to more arcane items such as the modem commands sent prior to dialing. Associating terminal emulation with individual phone numbers is useful if you call many different types of systems. For example, you can tailor minicomputer calls to VT100 emulation and BBS calls to ANSI emulation. HyperACCESS/5 provides 17 base emulations, including ANSI, ADM, IBM 3101, Televideo 925 and 950, a host of VT's (from VT52 to VT320, excluding graphics support) and more. And, of course, you can further tweak the base emulation support if necessary.

Unlike terminal settings, which can vary widely from system to system, most calls require nothing beyond default modem settings. But I like to change the setting when calling new systems or colleagues who use shared voice/fax/data lines. Normally, I set the modem's speaker for silent calling with the L0M0 command. But by changing a select few connections to L1M1, I can monitor those less reliable calls through the modem speaker.

Truly inspired individuals can custom tailor entries for screen colors, default transfer protocols, communications port (and modem type) and the "aggressiveness" of each session during multitasking, among many other parameters. These features have led me to adopt HyperACCESS/5 for most of my communications needs. (I still return to QMODEM for host mode operations, however.)

Whether HyperACCESS/5 will fit your needs will depend on

what you require from a communications package. If you're currently using QMODEM or PROCOMM, you may find the operation awkward at first. And if you need a solid, menu-driven host mode HyperACCESS/5 may not be your best choice. However, its strong terminal emulation is particularly well suited for users

who make outgoing calls to many different types of host systems. And if you can live without a GUI interface, you will find that HyperACCESS/5 has plenty of features to keep you happy. ♦

.....
Bradley Dyck Kliever is editor of *OS/2 Professional*.

HyperACCESS/5 3.0

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BYTES & PIECES

continued from page 15
to computerize and cross-check all statements. Small discrepancies in accounts by two people on opposite ends of the globe could be detected within 24 hours. As a result, the Inspector General determined that more than 51 officers had lied to investigators, and expanded the case to disciplinary recommendations for 175 officers.

Direct support

As part of an ongoing effort to improve OS/2 technical support, IBM has been running a pilot program that takes a new approach. Under the standard program, techni-

cal support takes a brief description of the problem and the caller's phone number. Later, a support person returns the call. Some users have complained that return calls may not come for days, if at all.

Under the new program, the operator puts the call on hold and routes the caller directly to the appropriate support department (again based on a brief description of the problem). Participants in the pilot program are randomly selected from the calls that arrive at the support desk. However, participation is strictly on a one-time basis, for now. ♦

Brad Klierwer

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TIPS AND TECHNIQUES

BY GORDON SCOTT

When James Cannavino, IBM Senior Vice President and General Manager, Personal Systems, first repeated the statement that OS/2 would be a "better DOS than DOS, a better Windows than Windows, and a better OS/2 than OS/2," he made a promise that the industry didn't forget. With OS/2 2.0, IBM managed to convincingly achieve two out of three, but running Windows programs under OS/2 2.0 was not what many users expected or desired. Most of those problems have been solved under new version 2.1. But most OS/2 users will still have version 2.0.

Multitasking Windows, DOS and OS/2 programs under older version 2.0 can still create a highly productive work environment—if you know how to set it up and you know what sacrifices to make. Some simple adjustments can be made to your system to help compensate for the speed loss. The following tips and techniques will show you how to optimize your system for running Windows programs under OS/2 and how to unlatch your Windows applications—even before you switch to 2.1.

Upgrade to OS/2 2.1.

How to do it:

- Call (800) IBM-30S2.

What this buys you: the final fulfillment of Cannavino's promise, "a better Windows than Windows."

This advice might sound like a cop out. It isn't. I'd be withholding facts not to point out that OS/2 2.1 has the equivalent of Windows 3.1 built into it. This support far surpasses anything you could do in OS/2 2.0 to optimize Windows 3.0 support. OS/2 2.1 is now on its way to thousands of customers. If you must have strong Windows performance, your best bet is to be one of those customers—it's that simple.

If, on the other hand, you prefer to wait until version 2.1 "proves itself," or if you're simply not in any hurry to

upgrade, then read on. The remaining tips and techniques will explain what you can do with your OS/2 2.0 system to improve the performance of Windows applications. Many of the tips apply to OS/2 2.1, as well.

NOTE: These tips assume that you installed the WINOS2.EXE program properly when you first installed OS/2.

Prepare your system to use Windows programs "seamlessly" under OS/2 by using a VGA resolution driver.

How to do it:

- You usually implement seamless Windows during installation of OS/2. But you can also change from a high resolution driver to a VGA driver by using the Selective Install utility in the System Setup folder (located in the OS/2 System folder). For running Windows programs, it's often better to use a VGA resolution video driver, even if it means sacrificing the XGA, 8514/A or Super VGA capability of your monitor. Of course, with OS/2 2.1, you can run seamlessly on a number of high resolution adapters, but you must still decide whether the improved resolution offsets the performance degradation.

What this buys you: speed, better integration with OS/2.

Using a VGA resolution driver improves speed over higher resolutions. With lower VGA resolutions screens repaint faster, and programs run more smoothly.

Running Windows programs seamlessly on the Desktop means that a Windows program appears in a window just like any other OS/2 program. On the other hand, when you run Windows programs in full screen mode all of your Windows programs reside in a Windows-like desktop that remains two keystrokes away from the OS/2 Desktop. If you run Windows programs frequently, you'll quickly tire of switch-

ing out of a Windows full-screen session to the OS/2 Desktop and back again.

Set your Windows applications to run seamlessly on the OS/2 Desktop.

How to do it:

- Open the Command Prompts folder (located in the OS/2 System folder).
- Select the Windows Full Screen command prompt.
- Press and hold the Ctrl key and mouse button two.
- Create a copy by dragging the Windows Full Screen icon to the Desktop and releasing the Ctrl key and mouse button.
- Open the Settings for the Windows Full Screen object.
- Change the file name WINOS2.EXE to the name of your windows program.
- Select the **Session** page of the Settings Notebook.
- Select the radio button for **Win-OS/2 window**.
- Select the checkbox for **Separate session**.
- Close the Settings Notebook.

Repeat these steps for each Windows program you want to run under OS/2.

What this buys you: integrated Windows programs and crash protection.

Running Windows programs side-by-side with OS/2 programs provides a more powerful computing environment. You can copy, cut and paste between programs, run DOS commands in the background, start a Windows print job and continue to work in another program while you wait for the document to print.

With each Windows program running in a separate session, your programs are protected from unexpected crashes. If one of your programs halts prematurely, all other programs will be protected from data loss.

Install Win-OS/2 printer drivers; be sure they are set to LPT1.OS2.

How to do it:

- When you install OS/2 printer drivers, OS/2 asks you whether it should install the equivalent Win-OS/2 printer. If you ignored this prompt the first time you installed the printer, you should reinstall the driver and select the equivalent Win-OS/2 drivers.

You will find a good explanation of printer driver installation in the **Start here** online documentation. The heading **Installing Printers** on the contents page provides an accurate and useful description of the process for adding a new printer to your system.

What this buys you: multitasking while printing.

When Windows programs use LPT1 or LPT2 as a printer port, they may tie up keyboard- and mouse-message processing. OS/2 circumvents this problem by allowing Windows programs to send their printer output to a spool file. The spooled Windows ports are designated as LPT1.OS2 and LPT2.OS2 (which spool output for LPT1 and LPT2, respectively).

If a Windows program sends information directly to LPT1, you may see the mouse pointer linger in its hourglass form for longer than you care to wait. To add insult to injury, you will probably be prohibited from doing anything else until the program is ready to return the cursor to your control. On the other hand, if a Windows program is sending information to LPT1.OS2, once printing begins, you can switch to any other program. Thus, you can continue printing without interrupting your work.

Set the Windows session DPMI_MEMORY_LIMIT to 3MB or higher.

How to do it:

- Click on a Windows program icon with mouse button two to bring up a

pop-up menu.

- Open the Settings of the program.
- Select the **Session** page of the Settings Notebook.
- Highlight the setting **DPMI_MEMORY_LIMIT**.
- Use the scroll bar in the upper right corner of the Settings dialog box to change the number from the default of two, to a value of three or higher.
- Close the Settings Notebook.

What this buys you: better speed in Windows programs.

This setting controls the amount of DOS Protected Mode Interface (DPMI) memory available to a given DOS session. Many Windows programs use the DPMI. As programs become more sophisticated, they require more memory to function. Increasing this Win-OS/2 setting can increase the speed with which the application runs by giving it more elbow room in memory, so to speak. In recognition of this fact, OS/2 2.1 uses a default setting of 64MB for Win-OS/2 DPMI memory.

NOTE: For a more thorough explanation of the DOS and Win-OS/2 settings, look for the recently published book on OS/2 written by IBMer Dave Whittle and columnist John C. Dvorak.

Keep 10 megabytes of hard disk space available.

How to do it:

- Keep 10MB free on the same partition of your hard drive where OS/2 is installed.

What this buys you: needed swap space for use when RAM gets tight.

If you have 8MB of RAM in your system, and you want to run three or more programs simultaneously (particularly any combination of native OS/2 and Windows programs), you can easily exceed the system's RAM capacity. Rather than limit the applications you may run when memory gets tight, OS/2 will temporarily swap low-priority data to your hard disk. If you leave 10MB or

more disk space free, OS/2 will have room to make such exchanges between RAM and disk quickly and effectively. You should also consider increasing your RAM to 16MB or more. Some users immediately notice the improved Windows performance after adding RAM to the system.

If you're tight on disk space and need a warning when it runs low, you should consider changing the SWAPPATH statement in the CONFIG.SYS file. This statement looks something like **SWAPPATH= C:\OS2\SYSTEM 2048 2048**. The first number determines the amount of disk space OS/2 should attempt to leave free, the second specifies the initial size of the swapper file. If you change the first number to 4096 (i.e., **SWAPPATH= C:\OS2\SYSTEM 4096 2048**), the disk space warning will be issued earlier. In this case, the "partition full" message will appear when the available space becomes less than 4MB instead of 2MB.

NOTE: Don't set the number too high, or the warnings will come too early—you want it just high enough for sufficient "breathing room."

Use a REXX command in the Startup folder to make a daily backup of crucial system files.

How to do it:

- Create a batch file using REXX commands similar to this one:

```
/* BK.CMD — Backup all critical files */
'copy c:\config.sys
c:\config.bak'
'copy c:\os2\os2.ini
c:\os2\os2.bak'
'copy c:\os2\os2sys.ini
c:\os2\os2sys.bak'
'copy c:\os2\mdos\winos2\win.
ini c:\os2\mdos\winos2\win.bak'
'copy c:\os2\mdos\winos2\
system.ini c:\os2\mdos\winos2\
system.bak'
exit
```

- Create a program object for this file, named BK.CMD.
- Place the program object, or a shadow

of it, in the Startup folder (usually located within the OS/2 System folder).

What this buys you: routine recovery precautions.

REXX is the programming language that comes with OS/2. What interpreted BASIC was for DOS, REXX is for OS/2. You can use this REXX program to make regular backup copies of five critical files. By placing a shadow of the program in the Startup folder these files will automatically be backed up when you boot your computer. If a problem occurs, you will have a recent copy of these files for quick recovery.

Create an OS/2 work area for quick editing of system files (like Windows' Sysedit). [Work Area suggestion from D. Patterson, Texas.]

How to do it:

- Create a new Folder, and change it to a Work Area [May TNT].
- Open the C Drive window (from the Drives folder in the OS/2 System folder).
- Double click on the Root directory folder with mouse button one. (The files in this folder should appear in a window.)
- Locate the data file icon for your CONFIG.SYS and drag a shadow of the data file to your new Work Area.

Use similar steps to create shadows of all files you want to edit at the same time you edit the CONFIG.SYS file (files such as your DOS AUTOEXEC.BAT, or the WIN.INI and SYSTEM.INI for Win-OS/2). Use these steps to set the Work Area in a ready state:

- Locate the program icon for your preferred editor (EPM, the OS/2 System Editor or any other editor of choice).
- Open the Settings for your preferred editor.
- Select the **Association** tab on the Set-

tings Notebook.

- Click once on the **Available types** field.
- Scroll down to and select, **Plain Text**.
- Select the **Add >>** pushbutton.
- Close the Settings Notebook.
- Double click on the data files for which you created shadows. (This should bring up each file in its own session of your preferred editor.)
- While all editing sessions are still active, close the Work Area by double clicking on its system icon (the upper left-hand corner of the open folder).

The next time you open the folder, all of the previously active files will be opened again. ♦

Gordon Scott writes online help and tutorials for IBM development tools. Send your ideas for OS/2 tips and techniques through Internet to him at GSCOTT@STLVM22.VNET.IBM.COM. He can be reached by phone at (408) 463-4483.

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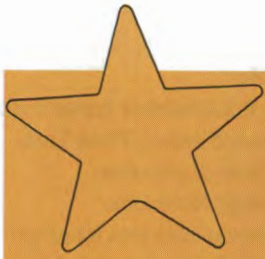
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Battle of the

BY WAYNE RASH JR.

Can OS/2 really connect to the outside world as well as advertised?

“I want to hook up OS/2 2.1 as a peer on my network,” software developer Matt Trask said, as he worried about his chances of success. But, he continued, “I’m not sure I can.” If anyone should be able to figure out how to make OS/2 work on a network, it should be Trask. His company, Communica, Inc., in Bourne, Massachusetts, specializes in developing systems software and device drivers for OS/2 and other operating systems.

Trask’s problem is one that is shared by many users. While OS/2 is considered by many to be a particularly strong operating system for use in a communications environment, others contend that there are glaring omissions in the way OS/2 connects with the outside world. The question is, who is right? Should you listen to those who say that OS/2 is one of the best communications platforms ever, or those who say it misses the mark in important areas? Can both sides be right?

The problem with making OS/2 part of a multiprotocol environment is that the solutions depend on more than just OS/2’s capabilities. To some extent, the makers of products with which OS/2 must communicate control OS/2’s destiny just as much as does IBM. An excellent illustration is Microsoft’s popular peer-to-peer networking system, Windows for Workgroups. There are thousands of users with Windows for Workgroups who use its networking capabilities to perform many departmental tasks that would otherwise rely on more traditional file servers. If these users add a workstation to their LAN, they want it to work with Windows for Workgroups.

At this point, however, OS/2 is designed to work in the mainframe and server-centric worlds made popular by IBM and Novell. By all accounts, it works well in such a centralized system. Yet in the peer environment, despite limited peer capabilities included with IBM’s LAN Server, it was not designed for integration with existing peer solutions.

Good Communications

“OS/2 is an exceptionally good communications platform,” says Jim Gilliland, a networking consultant with IBM’s Networking Consulting Practice in Cleveland, Ohio. “Its multithreading environment is a natural fit for communications, once people discover how easy it is.”

According to Gilliland, IBM has ported a number of its proprietary communications services to OS/2, including SNA and LU6.2. In addition, Gilliland points out that IBM’s TCP/IP service works well with other central systems. “It’s full featured and doesn’t require much in system resources,” Gilliland explains.

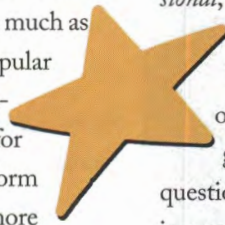
Other users agree that when faced with a typical mainframe or server-based networking environment, OS/2 comes off looking good. “OS/2 2.1 is well positioned to step into the big-iron environment,” Trask explains. “They’ve provided a solution for their existing customers.”

According to Trask and others interviewed by *OS/2 Professional*, OS/2 is indeed powerful when facing its designated target—the processing requirements of large corporations.

Unfortunately, the computing environment is changing to one more oriented toward several small integrated workgroups that constitute a larger corporate environment. The question is whether these smaller networks, many of which run in a peer-to-peer environment, can be served by OS/2.

Peering into the Future

“IS directors are scared to death of peer-to-peer networking,” says Trask, “and so by transference is IBM.” Trask is describing a scenario in which small organizations create networks where all communications take place between workstations on the network. In a peer network, there is no central file server running a network operating system such as LAN Server or NetWare. Peer net-



Network Stars

The answer is yes...and maybe. A lot depends on others.

working systems include Microsoft's Windows for Workgroups, Artisoft's LANtastic and Novell's NetWare Lite.

In LAN's earliest days, peer networking was quite common, but Novell's success with the server-centric NetWare changed that. IS managers embraced central server networking schemes because they were easier to manage, and offered more control and security for their companies' data. But peer-to-peer networking has staged a comeback attempt. New growth is seen with the recent introduction of several DOS-based peer networks that are relatively easy to set up and manage.

One common configuration in many large businesses is a peer-to-peer network using Windows for Workgroups that shares a LAN with a server-based network operating system such as NetWare. This allows users to create their own workgroups while taking advantage of the company LAN's physical plant. "This points to the concept of a domain as in LAN Server," explains Gilliland. "They're getting the benefits of a domain in an environment that doesn't otherwise support it."

Unfortunately, OS/2 isn't giving customers the answers they need to support existing peer networks. "NetWare Lite and LANtastic have established a niche. Windows for Workgroups is there, too," Gilliland says. What's missing is an integrating peer platform for OS/2. "I want to do backups of the workstations on my network," notes Trask, who explains that he has both Windows for Workgroups and OS/2 stations on his network. To manage these backups, as well as handle other projects such as distributed network printing, peer-to-peer networking is necessary.

Gilliland believes that much of OS/2's future rides on the addition of peer network support to OS/2. "It would bring OS/2 to a new family of users who are not using OS/2 today," he adds. Gilliland feels that small- and medium-sized businesses that have

not yet taken the OS/2 plunge would see the benefits once it met their networking needs.

Problems and Promise

Unfortunately, there's a lot that's beyond IBM's control when it comes to integrating OS/2 with other operating systems. First, there's the problem of getting support from third party developers. Calling it a public relations battle, Mark Minasi, author of *Inside OS/2 2.0* (New Riders Publishing, 1992) predicts that many companies won't be in a hurry to develop networking drivers and applications for OS/2. "[Microsoft] NT will win the PR battle initially, because the magazines will be comparing a shipping version of OS/2 2.1 with a beta version of NT." Minasi notes that beta software usually fares well in reviews because readers tend to forgive any faults. As a result of this, he explains, "The average company will concentrate on NT requesters instead of OS/2 requesters."

More important, even the Windows NT requesters needed to support networking operations are a long way down most developers' priority lists. "They'll do DOS and Windows first, of course," Minasi said. "What's next? Probably UNIX."

Minasi thinks that the PR tide will turn eventually. "Six months from now," Minasi predicts, "we'll have the ugly reality of NT as a released product."

Will a shipping version of NT help developers concentrate on OS/2? Trask isn't sure, partly because he isn't sure that Microsoft will cooperate. "Microsoft has the hubris to think they can ignore standards and practices," Trask says. "They'll pay for this."

IBM, meanwhile, is hard at work bringing OS/2 into the world of standards, beginning with communications. "TCP/IP is no longer black magic," Trask notes. Gilliland agrees, "IBM's



CONNECTIVITY

TCP/IP is full featured, and it doesn't require much in resources." He points out that IBM has introduced full support for Sun's NFS (network file system) and is shipping OS/2 command line and GUI versions of both Telnet (a remote network terminal emulator) and FTP (the UNIX file transfer protocol). "Novell's OS/2 Requester works fine with 2.1," Gilliland says, noting that Novell is just about to release NetWare 4.0 for OS/2.

"I see us becoming increasingly dependent on industry standards," Gilliland continues. "Some of the other vendors aren't doing this." Unfortunately, those other vendors (who must also work with standards) may stand in IBM's way as they attempt to support wide ranging connectivity solutions for OS/2.

Getting There from Here

It's easy to suggest directions that IBM should take in bringing wider acceptance to OS/2. "They need to look at how people use computers instead of how corporations use them," Trask suggests. "Corporations are made up of people."

How might IBM do this? "I think there's a need for peer net-

working," Gilliland says. While Gilliland believes that peer networking will bring many more people to OS/2, he's not certain from which quarter this capability will arrive. "Will we see it from Artisoft or IBM?" Gilliland asks.

In Minasi's opinion, IBM must do more to encourage rapid third-party development of OS/2 networking solutions. He points to Novell's OS/2 Requester as an example. "I think there's a superstitious belief on Novell's part against keeping the OS/2 Requester up to date," Minasi says. He claims that Novell doesn't seem to deliver a bug-free requester for one version of OS/2 until the next version of OS/2 ships.

On the other hand, Minasi recognizes that there are some things that are beyond IBM's control. "The latest version of [Microsoft] LAN Manager won't talk to [IBM] LAN Server," Minasi points out, explaining that the latest version of LAN Manager is designed to run on Microsoft's NT Advanced Server product (officially scheduled for delivery this August).

Still, IBM is making progress, according to those interviewed. "They could be much more effective," Minasi adds, "but they're figuring it out. The question is, will they figure it out in time?"

Gilliland believes IBM will figure it out in time. He points to the company's commitment to standards as an example. "We're going to migrate LAN Server to DCE," Gilliland explains. DCE is the standard data communications environment envisioned by the Open Systems Foundation. Meeting such industry standards is important to users who must communicate with other computers on other networks, whether or not they are part of the same enterprise. Many observers believe that customers will shy away from communications solutions that fail to meet such standards.

If this turns out to be the case, then IBM has positioned itself and OS/2 well for the future. Ultimately, developers assign a high priority to development only, once a significant customer base is available. This is why virtually every network-ready application works with Novell NetWare. As standards-based networking becomes more important to customers who must communicate increasingly across a diverse array of hardware and software environments, companies that embrace such standards (including IBM) will benefit. That in turn will ensure that OS/2 is well-supported in the communications environment, both within IBM and in the outside world. ♦

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Product News for the OS/2 User

COMPILED BY MARLENE SEMPLE

SCOOPS

Over the Wire...

If you've ever wanted a native OS/2 application to transfer files between your laptop computer and desktop OS/2 system, Rightware, Inc., might have just the product you need. Rightware's LinkRight provides parallel and serial port data transfer between systems. Not only does LinkRight sport a graphical PM interface with full 32-bit and multithreaded features, but the package also includes OS/2 full-screen command line support and a DOS version. So your DOS-based laptop (or desktop) is

not left out of the action.

If you're using long filenames with HPFS, LinkRight will preserve the full filename, even across DOS-hosts acting as an intermediary. Likewise, extended attributes are preserved across all transfers. Features such as file compression, CRC checking, event logging and error help insure efficient and accurate transmissions (and keep you apprised of any problems).

Rightware, Inc., 15505 Vilisca Terrace, Rockville, MD, 20855, (301) 762-1151.

...and through the Drive

CCT, Inc., of Minneapolis has added its entry to the race for a low-cost, easy-to-use backup utility. Like many of the popular DOS-based backup utilities, Back in a Flash! uses the floppy drives or other logical disk device (such as a LAN drive or second hard disk) rather than a tape subsystem. Taking advantage of OS/2's multithreading and full 32-bit operation, Back in a Flash! compresses files on the fly, reducing both storage

requirements and backup times. Users can set a regular schedule along with selection options such as files, directories and full or partial backups.

The introductory price is \$29 until September 14, at which time the full \$49 price will go into effect.

CCT, Inc., 111 Third Ave. South, Minneapolis, MN 55401, (612) 339-5870.

New Products

Stacker OS/2 doubles disk capacity

Now that you have OS/2 2.1 and OS/2 applications on your computer, you might be running short on hard disk space. Consider the new Stacker for OS/2 and DOS, a data compression utility that can double the storage capacity of your system.

Users who don't have enough disk space to install OS/2 2.1 can make room for it by installing Stacker first. Stacker will compress OS/2 as the new operating system is being installed.

Because Stacker includes device drivers for OS/2 and DOS, it can access and compress all OS/2, DOS and Windows data from both the OS/2 and DOS operating systems. Stac Electronics market research found that most OS/2 users migrate from DOS and keep a full version of DOS on their systems.

Stacker OS/2 works with hard disk FAT drives (not HPFS) and DOS disk repair utilities, according to its developers, with little, if any, slowdown in system performance. To enhance functionality over

the DOS-based version, Stacker for OS/2 supports special OS/2 features such as Boot Manager, Dual Boot configurations and extended attributes for files.



Additional utilities include AutoProtect, which detects disk errors at boot time and protects Stacker disks; AutoRecovery, which repairs disk errors; and Optimizer, which defragments Stacker disks.

Should you decide to remove Stacker, a simple utility (Unstack) will set things back to normal. Of course, before you unstack a drive you must first have enough disk capacity available for the uncompressed files.

In network environments, Stacker can be installed on the

MARKETLINE

local hard drives of the individual workstations and on LAN servers. But it's not necessary that all workstations use Stacker. They can access the server's Stacker drives whether or not the local stations have Stacker installed. List price is \$199.

Stac Electronics, 5993 Avenida Encinas, Carlsbad, CA 92008, (619) 431-7474.

IBM C Set ++ for OS/2

IBM's new OS/2 toolset, C Set ++ for OS/2, can help software developers build fast and powerful mission-critical applications. The new toolset contains everything that programmers need to develop applications using C or C++ to run on OS/2 2, IBM says. Some of its features are a 32-bit standards-conforming C and C++ compiler; precompiled headers; a suite of C++ class libraries or data objects; a visual trace analysis tool; a graphical C++ class browser; a visual Program Manager debugger with object-oriented features; and an integrated development environment with a graphical user interface, which supports smart configuration management. A starter set of C++ objects is included.

The compiler, compiler-related tools and associated utilities that form the C Set ++ Tools are knitted together and communicate with each other through the PM-based

WorkFrame. All product defects will be fixed free of charge, according to IBM. And when customers report a problem with the toolset, they will be told right away how soon they can expect a fix. In some cases this will be as soon as the following morning. Customers can talk with the C Set ++ developers through major bulletin board services. Introductory price is \$175. Upgrades from IBM's C Set/2 or Workset/2 are available for \$145.

Adapter speeds up OS/2 Communications

OS/2 Communications Manager and the OS/2 Entry LAN to LAN wide-area network application program can run faster with a new adapter from MicroGate. The Digital Services Adapter (DSA) is a half-size Micro Channel option card with selectable V.35 and RS232 data interfaces.

The DSA is compatible with the IBM Personal System/2 Multiprotocol Adapter A, but supports higher speeds—up to 64,000 bps. Because of its compatibility and high speed, the DSA can run IBM's SDLC communications software faster, including Communications Manager and the LAN to LAN WAN program for Token Ring internetworking over an SNA backbone WAN.

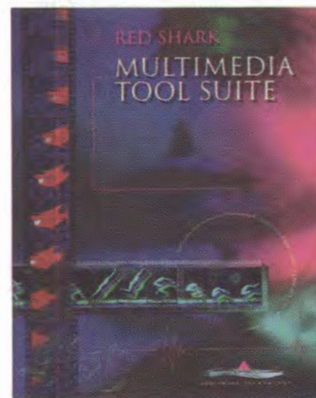
MicroGate Corporation, 9501 Capital of Texas Highway, Austin, TX 78759, (512) 345-7791.

Marching roaches?

BocaSoft WipeOut is a 32-bit screen saver for OS/2. It features 14 animated screen-saving displays with icon hunters, bouncing balls, screen fades and rotates, and—what is sure to become an all-time hit—roaches marching to music.

WipeOut includes password protection, integrated digital audio, customized message billboards and online help. The package requires OS/2 2.x (MMPM/2 1.0 or later for digital audio) and 2 megabytes of disk space. Introductory price is \$39.

BocaSoft, 117 NW 43rd St., Boca Raton, FL 33431, (407) 392-7743.



Nymbus Multimedia gets better

Nymbus Multimedia Tool Suite was recently upgraded to version 1.1 by Red Shark Technology Corporation. The enhancements to this multimedia development system include better performance, more efficient use of memory and the addition of online help. Nymbus Tool Suite requires OS/2 2.x and the Action Media II display adapter with the capture

option. Soon, Red Shark will release a platform-independent, software-only, full-motion video player.

Red Shark Technology Corporation, (617) 625-8318.

Comm Software for IBM ARTIC card

At the OS/2 Technical Interchange Conference in Phoenix, Quadron announced new releases of its three communication software development tools for the IBM ARTIC card.

The three Quadron products, qCF, qX25 and qLAPB, increase efficiency in servers or workstations, performing communication processing on IBM ARTIC co-processor cards in computer expansion slots. The new releases are compatible with IBM's C Set/2 compiler. The new products are expected to facilitate the writing of 32-bit communication applications for OS/2 systems.

Quadron Service Corporation, 209 East Victoria St., Santa Barbara, CA 93101, (805) 966-6424.

Tuning kit for OS/2 2.1

OS/2 has plenty of knobs and dials with which you can tinker. To help you understand and fine tune these settings and parameters, there's Performance 2.1.

This tuning kit comes with an 100-page book with both basic and detailed sections to guide novice through advanced users. All the topics

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focus on improving performance—HPFS and FAT, cache, multitasking, swapping, thrashing, timeslicing, threads and memory management, for example.

When you're ready to start tinkering, you can turn to the 30 utility programs of Performance 2.1. Most deal with system performance. A few can improve personal performance, such as DeskSave, which backs up the Workplace Shell desktop, and OS2Boot, which creates a single OS/2 boot diskette. All

programs are written in REXX, so you'll get 30 samples of source code that access and manipulate OS/2 objects. More than 3,000 public domain icons are included as a bonus. Performance 2.1 is priced at \$29.95.

Clear & Simple, Inc., P.O. Box 130, West Simsbury, CT 06092, (203) 658-1204.

New for industrial-strength client/servers

The newest component in the industrial-strength client/

server solution offered by Micro Focus is called Micro Focus Transaction System. It's a multiuser, multitasking, multiplatform online transaction processing (OLTP) system that supports client/server, cooperative, distributed and right-sized applications. It provides compatibility and connectivity with mainframe CICS systems.

Micro Focus Transaction System provides developers the ability to distribute mainframe OLTP applications to the right platforms based on

corporate requirements. The software features include function shipping, which allows a user to access data from a remote server; transaction routing, which provides for a transaction to be initiated on a client and redirected for execution on another platform; and distributed program link, which provides for remote procedure calls.

Micro Focus, 2645 E. Bayshore Rd., Palo Alto, CA 94303, (415) 496-7398.

News

Corel still committed

Despite wild rumors about Corel's commitment to OS/2, company sources confirmed to *OS/2 Professional* that, while they will be canceling plans for CorelDraw 4.0 for OS/2, they are not abandoning the platform. The company curtailed 4.0 plans in favor of developing a common code base that would streamline development for all platforms, including UNIX and NT. Only 20-25 percent additional development will be needed for each platform. This common API will appear in CorelDraw 5.0, due out by Spring 1994.

Corel's plan is to move its current OS/2 product—3.0—at a discount and then skip right to CorelDRAW for OS/2 5.0 next year. The same strategy will apply for its UNIX product which will skip from 3.0 to 5.0. There will be a 4.0 version for Windows, however, because it was too far

along, a source says.

Sales of CorelDRAW for OS/2 have been sluggish, in part because of delays created when IBM held up delivery of the 32-bit graphics engine. "If OS/2 users really want CorelDRAW, we suggest they tell us," a company official said, referring to disappointing sales volume.

Mirrors remains for now

Recent scuttlebutt about whether Micrografx remains committed to the OS/2 platform was answered in part by a source within the group working with Mirrors, the vital porting facility. As a bridge between Windows and OS/2 applications, Mirrors has a defined lifespan. That lifespan is more precisely dictated by the marketplace, independent developers and IBM's own cross-platform plans, which to a certain extent would elimi-

nate the need for Mirrors, the source said. "We're going to stay in the market until it makes no sense," the source said. But no one—least of all the people at Micrografx—knows IBM's plans to move applications to OS/2.

MVS PL/I emulation under OS/2

Micro Focus has been working with IBM Santa Teresa Laboratory in San Jose to develop an MVS PL/I application development environment for OS/2. The result: PL/I for ADMVS, which will support the Micro Focus IMS, CICS and DB2 options. Availability of PL/I for ADMVS is planned for September. Micro Focus will sell these products, with assistance from the Santa Teresa Lab.

Fax routing for private networks

Expecting fax routing over pri-

vate networks to be a hot new area in telecommunications, Brooktrout Technology has acquired a start-up development company that specializes in the field. DAFcom Corporation of Dallas will become a subsidiary of Brooktrout, a Needham, MA, company that specializes in voice and facsimile messaging.

IBM to service Hypertec processor

IBM will provide service for Sigma Data's Hyperace 486DX/33 processor upgrade when the device is installed in an IBM Personal System/2 under IBM warranty or service agreement. Customers can call their IBM service representative to install and maintain the boards, which are manufactured by Hypertec, an Australian-based supplier. Sigma Data distributes the upgrade products. ♦

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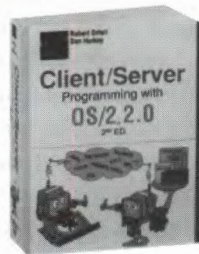
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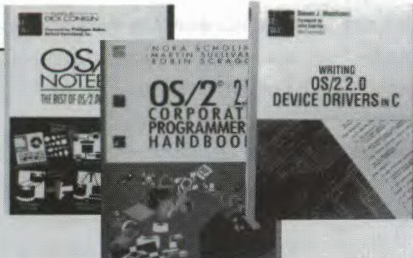
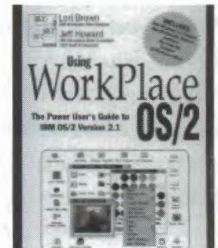
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GATES

HOW MICROSOFT'S MOGUL REINVENTED AN INDUSTRY, AND
MADE HIMSELF THE RICHEST MAN IN AMERICA

by Stephen Manes and Paul Andrews. Doubleday, \$25

REVIEWED BY BRADLEY DYCK KIEWER

The memories come rushing back. Hours spent after school in a cramped room not much bigger than a closet. Telephone handsets resting in rubberized cups. The whistle and hum of a 300 baud modem as it connects to a computer—and the clackety-clack of the teletype as a new session begins. Stephen Manes and Paul Andrews waste little time with preliminaries before digging into the influence of computers on the young Bill Gates.

Even if your high school years were not spent hunched over now-antiquated terminals or you only recently joined the computer revolution, you will learn much about the never-say-die attitude of Bill Gates and his computer-wise friends. And by opening *Gates* you will discover how a combination of his determination, timing and entrepreneurship parlayed an early obsession into a multi-billion dollar enterprise.

Manes and Andrews have written not just a biography, but a history of the microcomputer industry. While the content is by necessity focused on Gates' contributions and influences, there are plenty of interesting items about other industry figureheads; including Ross Perot's regrets over his dealings with Bill Gates, complaints from competitors about unethical business practices

and praise from admirers whose fortunes have risen on the coat-tails of Microsoft's success.

Details about the inner sanctum of the micro-giants abound.

As you read, you'll discover little gems of information that shed light on some of the current trends in the industry from development to marketing. Consider Microsoft's first product, for example: a version of the BASIC language designed for one of the earliest microcomputers, the MITS Altair. The headlines of the Altair's Users Group newsletter proclaimed, "Altair BASIC—Up and Running." The astute reader will not miss the parallels to IBM's latest marketing slogan, "OS/2: Not just up and coming. Up and running."

It is clear that exhaustive research lies behind Manes' and

Andrews' writings. While this may bring images of dry historical recitation to mind, don't be misled. In addition to the sparkle of trivia imbedded throughout, their style pulls you from chapter to chapter by teasing you with little tidbits of what's to come. The style is readable enough for the general public (including basic explanatory background for those who have little knowledge of computers). Manes and Andrews sprinkle the book with interesting quotes from the movers and shakers in the industry,



BOOKSTAX

adding a personal flavor that pulls you into the story.

While the style is readable by the general public, by avoiding the more technical details of computing, the book includes valuable information for experts whose livelihood depends on advances in the field. Indeed, *Gates* should be read by anyone developing or marketing products in the computer industry. The insights into the perils and profits of dealing with Microsoft and the microcomputer industry in general are priceless.

Note, for example, the story of Windows' early years—the parallels with OS/2's development and marketing are striking. Consider, for instance that like OS/2 1.x, Windows 1.x gained little following in the market when it finally shipped in 1985 (two years after its initial announcement). It would require an improved version (3.0) released five years later for Windows to catch fire. And like OS/2 2.0, Windows 3.0 sold about 2 million copies during its first three quarters on the market.

Of course, such facts are widely known and available. The interesting items lie in the details. Manes and Andrews give us a glimpse of the behind-the-scenes development work, infighting and personal triumphs. Their interviews with Microsoft employees (past and present) and leading industry executives give a depth of perspective not available elsewhere. This inside information can be both enlightening and entertaining. For example, the juxtaposition of small flamboyant anti-establishment Microsoft working with giant straight-laced IBM can be downright funny at times. During the initial development of the IBM PC, Microsoft's disregard for security provisions and the frantic (and sometimes unsuccessful) race to keep one step ahead of IBM security audits make for lively, interesting reading.

Through *Gates* you get a real feeling for the deal making, memo writing and media handling that made Microsoft a success. You also get a sense of single-mindedness that puts Microsoft's dominance of the market as the motivating force behind its decisions and negotiations. It's often not a very flattering portrayal—many of Microsoft's competitors complain of unethical business practices, and Gates sometimes comes across as a confrontational tyrant who gets his way or no way.

On the positive side, you get a feel for the vision and determination that give Gates and Microsoft the strength to compete. And despite the public perception that Gates is blessed with the Midas touch, Manes and Andrews document plenty of failures

along the way—failures that could have been greatly magnified without the perseverance to push products (such as Windows) forward despite years of problems and lagging sales.

Beyond the business aspects (and as you would expect from a biography), *Gates* delves into the personalities that have built the Microsoft empire. Manes and Andrews illustrate Gates' development of a successful team, where individual members were inspired to devote attention to a rapidly growing company as part of (or at the expense of, depending on your viewpoint) their personal lives. You will find the portrayal of a man with long-term vision who works at inspiring long-term commitments. For example, Microsoft offered stock incentives to workers that wouldn't pay in full for years—an option Andrews and Manes lightheartedly refer to as "Golden Handcuffs."

Gates covers not just computers, but the personal side of his life: from his penchant for fast cars and daredevil antics to family life (and the subtle pressure to further extend that family). Gates' fast-paced lifestyle and last minute crises are legendary. Manes and Andrews fill the book with scores of entertaining anecdotes about Bill and company. How big a premium does it take to get after-hours delivery from Domino's Pizza? How do you get a departing plane to return to the gate? What happens if you import a car that's not street legal in the United States? The answers may surprise and amuse *Gates'* readers.

My only disappointment in reading *Gates* was the lack of commentary from IBM sources, particularly regarding the divorce of IBM and Microsoft over Windows and OS/2. While Manes and Andrews include plenty of background on the IBM/Microsoft relationship, from the development of the PC to the competition between OS/2 and NT, the IBM view was not as well-represented as in other similar cases (such as Microsoft and Apple). It is notoriously difficult to get IBM officials to comment on competitors, so the sparseness of such commentary should come as no surprise, but is nevertheless missed.

Gates is a mixture of triumph and tragedy, drama and suspense, emotion and analysis. Manes and Andrews have written a history and biography that is at once entertaining and informative. Whether you work with business or computers, or are simply curious for details on how the wealthiest man in America made it to the top, *Gates* should be at the top of your reading list. ♦



THE LAW

Legislation and Regulation for the Information Age

BY TIMOTHY J. BURGER

• **Kantor reviews Super Computer Agreement.** U.S. Trade Representative (USTR) Mickey Kantor has initiated "a comprehensive review of Japanese government behavior under the [1990 Supercomputer] Agreement thus far and" promises to "closely scrutinize" several contract awards the Japanese are slated to make in the next several months. "We are determined to ensure that Japan treats our companies fairly and complies with its obligations under the Agreement, Kantor said, "[which] obligates Japan to provide a fair and open government procurement market for supercomputers." The agreement calls for foreign companies to compete for contracts with the Japanese government.

The USTR noted that, while U.S. supercomputer companies "hold about 85 percent of the...public sector market," this number dips to just 11 percent in Japan.

Under the 1990 agreement, "Japan agreed to undertake unilateral measures to open its supercomputer procurement market to competition."

• **USTR targets numerous countries.** Using his "special 301" negotiating authority, U.S. Trade Representative Mickey Kantor has named Brazil, India and Thailand as priorities for investigation. Talks with Thai officials on intellectual property issues are now underway even as Kantor's intragovernment task force considers "future actions, including options for appropriate retaliation" in the event corrective action is not forthcoming.

Kantor also moved to initiate "immediate action plans" against 10 other countries, including Hungary and Taiwan. In addition, his office mandated "out-of-cycle reviews" (which will include the setting of deadlines and the

establishment of "benchmarks" for measuring progress) for Korea, Argentina, Egypt, Poland and Turkey. The active USTR office has even begun "intensifying consultations" with Australia, the European Community and Saudi Arabia.

Hailing his aggressive approach, Kantor said he will be insisting that, for a country to remain on or return to the list of favored trading partners, it will have to show continual efforts at complying with the "special 301" list requirements.

"In the past, rather than steady progress we have seen an annual springtime flurry of enforcement actions. [Now], countries must make sustained progress in addressing the problem issues [and should not expect to have] permanent residence" on the special 301 list.

Kantor noted, however, that several countries have made positive progress this year by enacting new intellectual property protections. Singled out for praise were: Switzerland, Taiwan, Columbia, Canada, China, Greece, Malta, Cyprus, Jamaica and Russia.

Kantor also drew up a list of a number of nations that he had determined "deny adequate and effective protection for U.S. intellectual property [and or] fair equitable market access for relevant U.S. products," according to his office.

Meanwhile, the USTR signalled an interest in hearing any complaints that American companies have, saying: "I want to make sure that we solve particular problems brought to our attention by the U.S. intellectual property community."

• **ITC probing France's Nomai SA.** The International Trade Commission (ITC) has voted to investigate allegations by a California hard-disk manu-

facturer that the Avarandes, France, firm, Nomai SA, has been using "unfair methods of competition and unfair acts" in its U.S. marketing efforts.

SyQuest Technology, Inc., of Fremont, CA, sparked the probe by formally accusing Nomai of several violations of Section 337 of the U.S. Tariff Act of 1930. According to the ITC, the allegations surround Nomai's "importation into the United States of certain removable hard-disk cartridges and products containing these cartridges."

ITC investigation No. 337-TA-351 will focus on allegations of misappropriation of trade secrets; infringement, false advertising; and "passing off."

An affirmative finding in the investigation could result in an order excluding the accused products from entering the United States. A final ITC verdict is due within a year, unless the probe is determined to be of a "more complex" nature. In that case, ITC will have up to 18 months.

• **On the Hill:** CBEMA lobbies for NAFTA. The Computer and Business Equipment Manufacturers Association (CBEMA) this spring initiated an intense lobbying operation in favor of the North American Free Trade Agreement (NAFTA), which appears to face a tough fight for approval by Congress. This could prompt a rare alliance between President Bill Clinton and Capitol Hill Republicans, provided Clinton minimizes the addition of any exceptions to gain Democratic support.

CBEMA began its efforts with a focus on the Ohio delegation whose rust-belt members could be swing votes in what is expected to be a tough fight to approve NAFTA. ♦

Tim Burger is a reporter for Roll Call, the twice-weekly "Newspaper of Capitol Hill."

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by Jim Cannavino, IBM Sr. VP and General Manager of Personal Systems; interactive elective sessions on the latest in OS/2®, LAN Systems, 32-bit graphics, object-oriented programming, multimedia, pen, database and communications; OS/2 and LAN labs; and an exhibit area with demos of vendor software that exploits PSP products. There will be special bonuses, product raffles and an active schedule that even includes a "special event."

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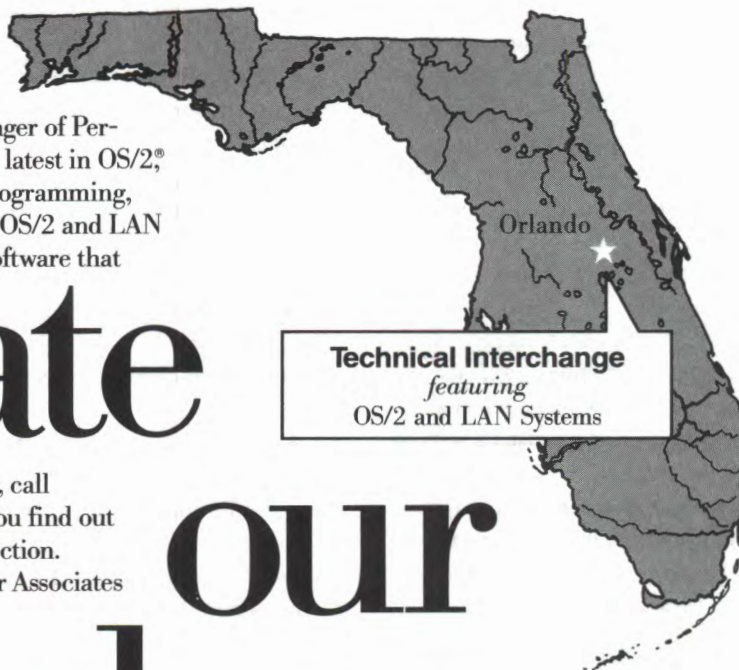
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Seminars, Conventions, Expositions and Conferences for the OS/2 Professional

COMPILED BY KAREN THOMAS

JULY 12-13

INTERACT

Burlingame, CA

Exciting new multimedia products from 3DO, Asymetrix, C-Cube, Continuum, NuMedia and Electronic Arts will be demonstrated at Interact, another unique conference from Dick Shaffer's company, Technologic Partners. Known as an investment analyst, Shaffer started with PC Outlook, an investment conference, and continued to add successful conferences on mobile computing, pen technology and now entertainment technology. At Interact, you'll hear timely discussions on "Talkback TV," electronic learning, animation, super cable and the disk revolution. Should be worth attending. Conference price \$895.

Contact: Technologic Partners, (212) 696-9330.

JULY 19-22

OS/2 DEVICE DRIVER CONFERENCE

San Jose, CA

A common complaint plaguing OS/2 has been the lack of device drivers. Here's your chance to cash in on this need at the OS/2 Device Driver Conference held at the Fairmont Hotel in San Jose. Registration fee is \$895, but you'll get lots of extras, like \$100 off the IBM Device Driver Development Sourcekit for OS/2 and a free copy of OS/2 2.1. Important IBM Personal

Software Products executives will be discussing how to write OS/2 device driver code more productively and how to develop for display, printer, storage, LAN, multimedia and input devices. Exhibits will also be included.

Contact: (800) 872-7109.

AUGUST 23-27

BUSINESS SOFTWARE SOLUTIONS

Boston, MA

Held in conjunction with the programming conference Software Development, Business Software Solutions (formerly called Windows & OS/2 Conference), is concentrating its united conference on helping businesses manage software on their desktops: which GUI to choose and how to integrate opposing platforms prevalent in today's office. Speakers will include IBM's Senior Product Manager, Mark Goldstein and IBM watcher and analyst Amy Wohl. Last year's neat events: Jolt Cola Awards (1992 winner OS/2 2.0) and the jazz jam session. This year promises to be just as lively. *OS/2 Professional* is a leading sponsor of the conference.

Contact: Miller-Freeman, (214) 245-6358.

AUGUST 29-SEPTEMBER 2

PSP TECHNICAL INTERCHANGE

Orlando, FL

IBM PSP is sponsoring a late August festive conference at Disney World in Orlando sure to boost the technical OS/2 prowess of registrants. The emphasis is on PSP, and the latest technologic developments. Database, communications, pen computing and multimedia are just a few of the many topics to be explored. The conference features an extensive exhibit area highlighting both vendor hardware and software products that exploit PSP.

When you're in Orlando, you can take in America's most exciting theme parks, Disney World, Sea World and many more. It's perfect for a family vacation.

Seating is limited. Registration costs \$795 if completed by July 15. After July 15, the fee goes up to \$895.

Contact: PSP, (508) 443-4990.

SEPTEMBER 21-23

UNIX EXPO '93

New York, NY

Geared to managers now working or planning to work with UNIX or Open Systems, this conference will target the specifics needed to build Open Systems. In addition to management and networking, tracks will be offered on software development, object-oriented technology, emerging technologies and operations.

Contact: Don Berey, show manager, (800) 829-EXPO, ext. 9107.

OCTOBER 17-20

OS/2 PROFESSIONAL INTERCHANGE

Palm Springs, CA

Billed as "The OS/2 Event of the Year," The *OS/2 Professional Interchange* will take place at the magnificent Marriott Desert Springs Resort and Spa in Palm Springs, California. Top experts from IBM, Lotus, Computer Associates and WordPerfect will be converging to discuss and celebrate OS/2 at the luxury resort. Highlights of the conference will be keynotes from John Soyryng, IBM; John C. Dvorak, *PC Magazine*; Will Zachmann, *OS/2 Professional* columnist; and Edwin Black, *OS/2 Professional* editor and publisher. The speakers will discuss up-to-the-minute developments in OOP (object oriented programming), pen computing, database, LAN systems, programming, communications, multimedia and device drivers—all with an emphasis on OS/2 2.1.

The event is geared for top LAN consultants, developers, MIS managers and others who must stay abreast of the latest in OS/2 2.1.

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DAY 2 • Day 2 will include special 3-hour sessions of the Day 1 agenda for Large Enterprises, VARs, SIs and Software Developers

- Answers to Your OS/2 Related Questions

1993 Seminar Dates and Locations:

| | | | |
|-----------------|------------|----------------|--------------|
| Phoenix, AZ | July 7-8 | Louisville, KY | August 4-5 |
| Pittsburgh, PA | July 14-15 | Columbus, OH | August 11-12 |
| Portland, OR | July 21-22 | Baltimore, MD | August 18-19 |
| Los Angeles, CA | July 28-29 | Miami, FL | August 25-26 |

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DATA DATES

latest version of OS/2, along with IBM C++ Set/2, an assortment of LAN software, IBM Communications Manager and more. Plus, every registrant chooses one of Computer Associates' hot new OS/2 applications including: CA-Realizer, CA-Textor, CA-Compete, CA-SuperProject, Simply Accounting or CA-dBFAST. WordPerfect Corporation will provide an interactive CD-ROM with 5.2 for OS/2, which includes special buttons with tips and tricks, install tutorial and MIS back-grounder.

Anyone attending pre-conference sessions will receive Lotus 1-2-3, DeScribe and Stacker for OS/2 from the respective sessions.

Fun at the conference: the poolside event "OS/2 Oasis Reception," a Casbah and OS/2 chips for the end-event raffle.

Registration, limited to 2,000, is \$795 before September 2; \$895 after September 3.

Contact: CT Meeting Planners, (800) GET-OS20, (800) 438-6720. Press contact: (516) 549-7575. ♦



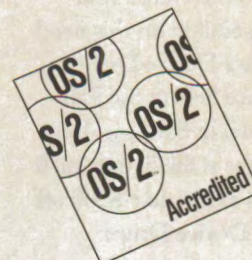
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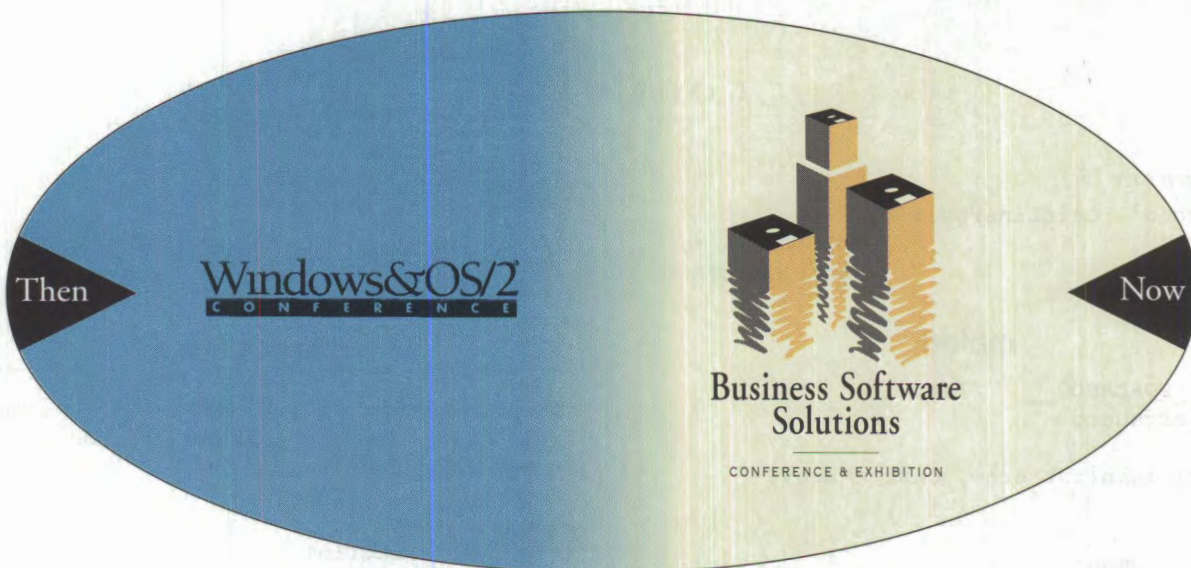
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for details and a registration form.



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to give your enterprise easy access to *legacy data on the desktop*. And you'll learn how to build Windows and OS/2 solutions that really meet the needs of your end-users.

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CODE CACHE

continued from page 75

```
static void CalcLinePosition(HWND,
                             GLOBALDATA *,
                             short, RECTL *);
```

main()

```
#ifdef __BORLANDC__    ///##
#pragma argsused
#endif
int cdecl main(int argc, char **argv)
{
    QMSG      qmsg;
    GLOBALDATA GlobalData;

    memset(&GlobalData, 0, sizeof(GlobalData));

    /* Initialize PM */

    GlobalData.hab = WinInitialize(0);

    /* Create a PM message queue. */

    GlobalData.hmq =
        WinCreateMsgQueue(GlobalData.hab, 0);

    /* Register the client window class. */

    if (WinRegisterClass(GlobalData.hab,
        CLASSNAME, ClientWndProc,
        CS_SIZEEREDRAW, sizeof(GLOBALDATA *)))
    {
        /* Create the frame and client windows. */

        if (CreateWindow(&GlobalData))
        {
            /* Dispatch messages until a WM_QUIT
            message is received. */

#ifdef USE_32_BIT
            while (WinGetMsg(GlobalData.hab, &qmsg,
                NULLHANDLE, 0, 0))
#else
            while (WinGetMsg(GlobalData.hab, &qmsg,
                NULL, 0, 0))
#endif
            WinDispatchMsg(GlobalData.hab, &qmsg);
        }
    }

    /* Destroy the message queue. */

    WinDestroyMsgQueue(GlobalData.hmq);

    /* Terminate use of PM and release all
    resources. */
}
```

```
WinTerminate(GlobalData.hab);
```

```
return (0);
}
```

Explicit Rules

```
dos2pm.exe: dos2pm.cfg dos2pm.obj dos2pm.res
    tlink /v /Toe /aa /S:4096 /Ld:\bc\lib @&&|
d:\bc\lib\c02.obj+
dos2pm.obj
dos2pm,dos2pm
d:\bc\lib\c2mt.lib+
d:\bc\lib\os2.lib
```

```
|
rc dos2pm.res dos2pm.exe
```

Individual File Dependencies

```
dos2pm.res: dos2pm.cfg dos2pm.rc
    brcc -r -id:\bc\include -fo dos2pm.res
dos2pm.rc
```

```
dos2pm.obj: dos2pm.cfg dos2pm.c
    bcc +dos2pm.CFG -c dos2pm.c
```

Compiler Configuration File

```
dos2pm.cfg: dos2pm.mak
    copy &&|
-Ld:\bc\lib\
-I$(INCLUDE)
-vi-
-sm
-d
-v
-DUSE_32_BIT          # do 32-bit compile
| dos2pm.cfg
```


INPUT

continued from page 61

Tunnel Syndrome and Overuse Injuries: Prevention, Treatment and Recovery (North Atlantic Books, 1992), I share your concern at the alarming rate at which these injuries affect people whose work duties involve repetitive motion of the hands and arms. Computer operators seem to be the hardest hit, and I applaud your decision to begin a column on healthy computing.

*Tammy Crouch
San Diego, CA*

An opening for Windows

I would like to offer a little advice to fellow OS/2 evangelists now that OS/2 is receiving some of the credit it is due. Don't berate or I-told-you-so those Windows bigots who have been abusing you for your patriotism to OS/2. Most of these PC gurus had good cause to choose Windows as the successor to

DOS. "The applications and the environment are here now," I was told day-after-day while trying to support my small OS/2 Lan Server 1.1 network. And they were right. But now that is changing.

Let's look at the typical Windows jock. A young, get-things-done PC hack, trying to make a difference; fighting a bureaucratic, transaction-based, glass house mentality. Why should he wait three months to change the format of this report when he can suck it into 1-2-3 and print it himself this afternoon?

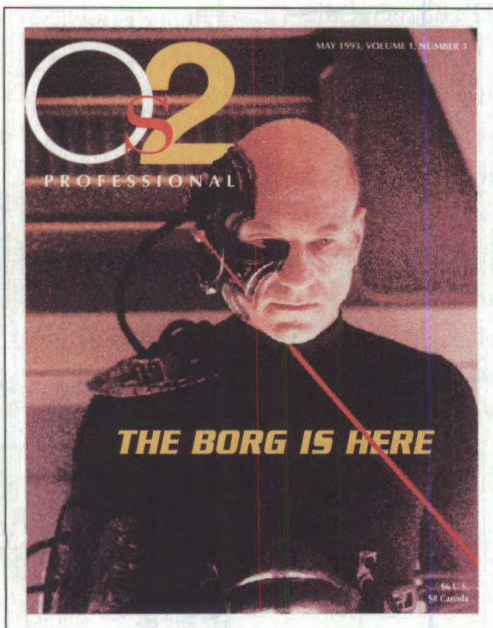
Now along comes Windows (Microsoft). A nice upgrade to DOS powered by a young, aggressive marketing juggernaut that flaunts its ability in the face of the establishment (IBM). Remember Displaywrite! Which train would you ride? The one that flies or the one that drives 55! This is just the kind

of role model for which our young jock has been looking.

OS/2 needs these guys. These are the decision makers of the future. The key is to get this ex-WBTE (pronounced We Byte—wet behind the ears) who now has gotten a taste of real system development, understands the implications of down time and so on to join the effort. We need these technophiles for the cause! We need to convert them not spurn them! If you can convert these guys the war is over! As much as you might not want to, you have to resist the temptation to "I told you so," and smooth talk them right into the OS/2 camp! Now is a critical time! Big decisions will be made by many in the coming months. Once the decision on an operating system is made, it may never be changed! ♦

*Larry Krauss
Tampa, FL*

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LET THE CHIPS FALL

Stop the Feuding

With the announcement of OS/2 2.1 and Windows NT, IBM and Microsoft have escalated the operating system wars to a new level. While competition in software is almost always a good thing because it fosters innovation and lower prices, it could hurt the industry in this case. It's time for IBM and Microsoft to figure out how to coexist and prosper without beating each other up!

It's not likely that these companies can ever entirely settle their differences and bring order to the world of PC operating systems once more. But they should be able to realize that neither has the capability to wipe out the other. More important they should realize that the software industry and the software user community are interested not in knock-out blows, but in furthering the integration of multiplatform computing environments through new technology.

Over 10 years ago, when IBM contracted with Microsoft to provide an operating system for its personal computers, IBM had the clout to establish MS/DOS and its PC/DOS clone as the *de facto* standard, and it made many independent software vendors very wealthy. After a few false starts, IBM and Microsoft in 1987 jointly announced OS/2 which promised to finally exploit the 80286, and its successor the 80386, and do away with all the limitations of DOS once and for all. Most of you know the rest of the story. OS/2 version 1 was a dismal failure as an end-user operating system. Microsoft began to support a two-pronged strategy for graphical computing with Windows. It ran well on most of the PCs already installed. OS/2 did not.

By 1990 the IBM/Microsoft relationship began to show signs of strain ending with Microsoft's complete abandonment of OS/2 and a total focus on Windows. They took OS/2 and began to retool it as NT. IBM also reworked OS/2 version 1 and built the OS/2 we use today.

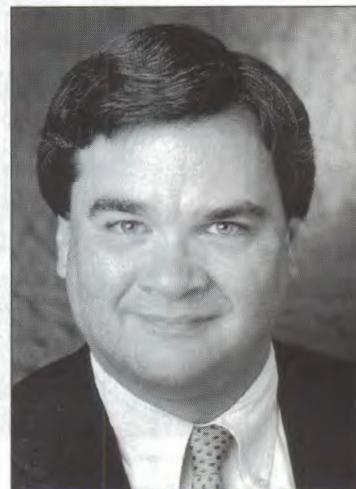
The current competition between these two giants does have some good aspects. You can be sure that we are getting

faster deliveries on new versions. You can also be sure the prices for these advanced operating systems are much lower than they would have been had the united front been maintained. But it also causes tremendous confusion and doubt among users in both small and large organizations. Users are faced with costly migrations or less than perfect compatibility tools to have different operating systems coexist. This, in turn, can slow down the introduction of new technology and better software productivity tools.

Although low price and timely delivery are very attractive qualities, in the case of operating systems, this does not tell the whole story. Two different operating systems force independent software vendors like Lotus to divide their resources and efforts. It also forces retailers to set up separate shelf space and warehousing for the different "flavors" of applications. In short, the battle between IBM and Microsoft is causing a lot of wasted time and money for the rest of us.

Isn't there any way these two technology leaders can learn to cooperate once more? Can't we take the best aspects of OS/2 and NT and merge them into a new operating system? Call it OS/3. Call it compatibility. Call it a common set of APIs. Call it what's best for the industry and customers. Call it the best way to exploit new hardware technology. But, above all, call an end to this useless religious war about operating systems and let's get back to work delivering tools and solutions that help all of us. ♦

Jim Burnham
Lotus Corporation





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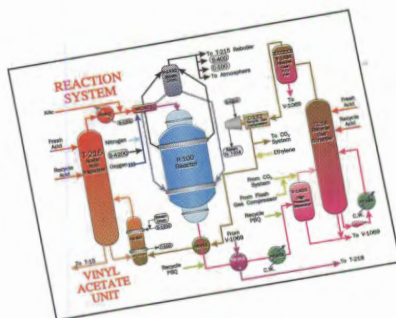
CorelDRAW is a 32-bit illustration software program, specifically developed for OS/2, that takes full advantage of the power and threading capabilities of OS/2 version 2.0 or higher. Now you can create effective slides, flyers, brochures, newsletters, creative designs and technical illustrations easily – and up to 25% faster than ever before!

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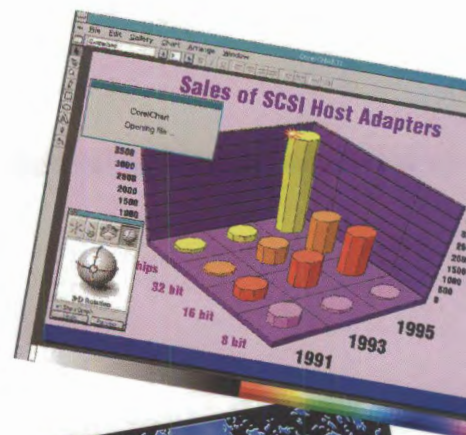
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that

ing the race needs to be compiled so the results can be validated.

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the

Indy 500.

the



92RACEAF.BAT

INDY 500 RACE - 6 LAPS - 4:12.631 - 213.750 - UNOFFICIAL

| POS | CAR | DRIVER | TIME | LAPS | TIME | LAST | TIME |
|-----|-----|--------|---------|------|-------|------|-------------|
| 1 | 1 | 6 | 306.693 | 13 | 21.15 | 6 | 301.142 T2 |
| 2 | 2 | 6 | 282.757 | 12 | 22.14 | 6 | 302.011 T2 |
| 3 | 3 | 6 | 283.674 | 12 | 23.93 | 6 | 307.494 T2 |
| 4 | 4 | 6 | 307.655 | 10 | 42.48 | 6 | 304.573 T8 |
| 5 | 5 | 6 | 284.659 | 12 | 25.47 | 6 | 306.573 T8 |
| 6 | 6 | 6 | 285.619 | 12 | 26.92 | 6 | 306.506 T8 |
| 7 | 7 | 6 | 286.110 | 12 | 27.68 | 6 | 303.877 T1 |
| 8 | 8 | 6 | 287.391 | 12 | 28.39 | 6 | 304.876 T1 |
| 9 | 9 | 6 | 290.407 | 12 | 29.21 | 6 | 306.265 T1 |
| 10 | 10 | 6 | 290.610 | 12 | 30.31 | 6 | 307.234 T8 |
| 11 | 11 | 6 | 290.961 | 12 | 31.13 | 6 | 220.685 T2 |
| 12 | 12 | 6 | 291.756 | 12 | 32.44 | 2 | 396.533 T8 |
| 13 | 13 | 6 | 292.263 | 12 | 33.36 | 4 | 7.8 |
| 14 | 14 | 6 | 293.388 | 12 | | | OUT OF RACE |
| 15 | 15 | 6 | 294.499 | 12 | | | |
| 16 | 16 | 6 | 295.300 | 12 | | | |
| 17 | 17 | 6 | 296.691 | 12 | | | |
| 18 | 18 | 6 | 298.352 | 12 | | | |
| 19 | 19 | 6 | 298.981 | 12 | | | |
| 20 | 20 | 6 | 300.651 | 12 | | | |

STATUS: 68

VIEW 31

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official timing and scoring system, and determine the actual winner of the race.

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